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THE ANTI-SIPHON TRAP.

In "Domestic Engineering" for January 8, 1910, we called the trade's attention to the arbitrary action of the San Francisco Board of Health in its recent pronunciamento that it "is absolutely opposed to any form of anti-siphon trap or the adoption of any plan of plumbing that would in any way have a tendency to interfere with the proper venting of plumbing fixtures." We made a defense of the anti-siphon trap in which we quoted excellent authorities to support our position that as the anti-siphon trap was capable of maintaining its seal under conditions which could prevail in any system of ordinary house plumbing, that its use should be permitted and even encouraged by health departments. We also quoted an excellent authority upholding our position that by using anti-siphon traps in certain cases it would be possible to do away with some portions of the complicated back-venting systems which some city ordinances require. In order to sustain our position we quoted other authorities as to the unlikelihood of sewer-gas being a cause of or a carrier of disease.

We are pleased that the editorial should have called forth criticism. We are particularly glad to have that astute master plumber, H. F. Baillet, of Newark, N. J., write so fully upon sewer-air as a cause of sickness, and we are interested in certain cases he cites to sustain his claim "that sewer-air, so far as infection detrimental to health is concerned, is not practically nor theoretically negligible." But we must reply to his statement in his own words, that these can be considered as having no value only so far as Mr. Baillet's observations went, and we find in no one of the three cases he cites, any claim that all other predisposing or contributory causes of sickness were absolutely eliminated, or that the sewer-air acted uniformly upon all persons submitted to its effects. It seems to us that Mr. Baillet's cases do not prove any more than that bad odors made certain persons ill. This is frequently observed even when the disagreeable odors do not come from a house drain. We do not find any statement in Mr. Baillet's excel-

lent and interesting letter which seems to combat our position that as it seems quite certain that sewer-air is generally nothing more than a bad smell, that it can be quite effectually excluded from inhabited rooms by anti-siphon traps.

We have also been criticized because in the article referred to we did not point out that back-venting a plumbing system had more than one purpose; that in addition to preventing the advent of bad sewer-air into rooms by preventing the siphonage of traps, a back-venting system also contributes to the purity of the air within the house-drainage system by frequently changing it. This is undeniably true, and to that extent a back-venting system is useful. But we do not believe that it is important enough to require a back-vent to every trap, regardless of its location. We believe a well-designed plumbing system, with fixtures compactly and vertically set, close to the main waste stacks, could quite generally provide for approved anti-siphon unvented traps, if they are located not too far away from the vented stacks. The unvented

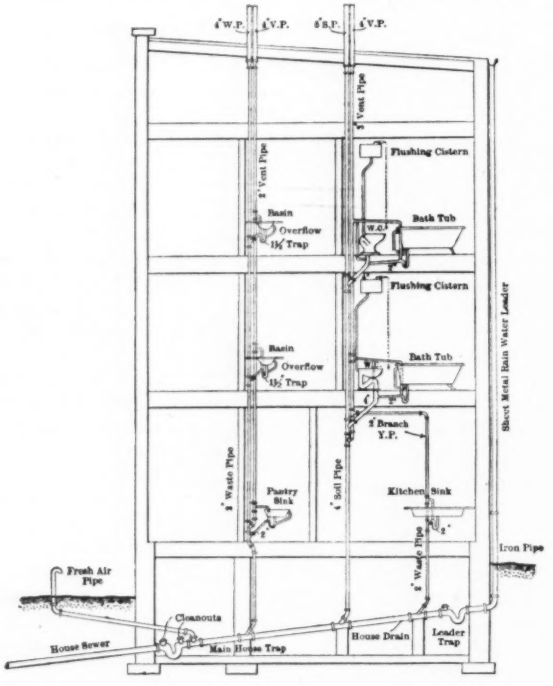


Fig. 1. House-Drainage Arranged on the Two-Pipe System.

Diagram of House-Drainage arranged as usually prescribed where back-venting is practiced. This is called the "two-pipe system" by William Paul Gerhard, C. E., from whose new book on "Water Supply, Sewerage and Plumbing of Modern City Buildings" it is taken. It should be studied in comparison with Fig. 2.

branch waste must not be so long that there will be a fouled surface sufficiently large to permit decomposition to occur in an undesirable amount. The length which an unvented branch waste can have before this is possible to occur is not authoritatively fixed. It is one of those details which, as Mr. Baillet so well says, should be settled by a competent authority. Just now it is a matter of personal opinion. On this point we wish to quote Charles B. Ball, C. E., chief sanitary inspector of the Health Department of Chicago, who says in his "Plumbing Catechism" (page 103, 2nd edition):

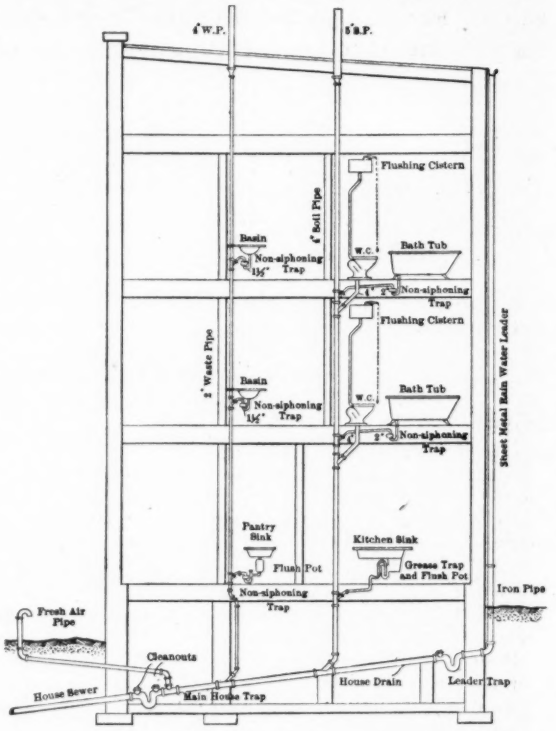


Fig. 2. House-Drainage Arranged on the One-Pipe System.

Diagram of House-Drainage in which non-siphoning traps make back-venting unnecessary. This is called the "one-pipe system" by William Paul Gerhard, C. E., from whose new book on "Water Supply, Sewerage and Plumbing of Modern City Buildings" it is taken. It should be studied in comparison with Fig. 1.

"It is a safe practice where a fixture is near a vertical stack and its trap is not liable to be affected by the discharge of other fixtures into the same stack, to allow its trap to remain unvented. The extreme distance from the stack allowed by any regulation is five feet, which is probably too great for entire safety. This construction is less desirable if an S-trap or three-quarter S is used than with a P-trap."

What is true of non-mechanical traps would be true of approved anti-siphon traps, and we are sure safe plumbing practise will permit their use under fixtures with unvented branch wastes not more than five feet long, when discharging into vented main waste-stacks.

To illustrate the simplification of plumbing which would be possible if anti-siphon traps were generally used under fixtures which are near enough the main stack, we reproduce two illustrations from a

new work on sanitation by William Paul Gerhard, C. E., of New York, entitled "The Water Supply, Sewerage and Plumbing of Modern City Buildings."* In these drawings Mr. Gerhard graphically shows how much simplicity could be secured without sacrificing efficiency or safety, by using non-siphoning traps. The drawings illustrate the plumbing required in a house with a complete system of back-venting and with the back-venting omitted where non-siphoning traps can safely take its place. These drawings speak more potently for simplified plumbing than any words of ours and we are sure they will repay careful consideration. We hope they will assist us in making more converts to the practice of simplicity in plumbing.

COMMENTS ON "WAIT A MINUTE!"

Referring to Mr. Baillet's most excellent article on the anti-siphon trap, entitled "Wait a Minute," as published in your issue of January 15th, one cannot help thinking that it was a little regrettable that he did not try his experiment upon the dog, rather than upon the typhoid suspect.

In the case of a "young lady afflicted with throat trouble," she should be congratulated that the defective drain was not again reopened to prove that case as well.

Evidently, in the lack of rebuttal, the gentleman would seem to have established his claims, i. e. that the filth surcharged roots taken from the street side of the stopped-up house-sewer, and the other defective drainage, were directly responsible for both cases of disease, as mentioned.

It should not be overlooked, however, that that mass of putrescent matter clinging to the roots, was not a whit more dangerous in character, than the filth covered walls of every house sewer, back of the main intercepting traps. Ordinary common sense would incline to the conviction, that stored-up filth, resulting from the installation of such a trap—or from any other source, cannot be sanitary, or helpful to any degree—save possibly as a fertilizer, the latter commodity not being especially a necessity in house drainage systems.

It would, however, seem that the term "sanitary," as applied to the various health codes, has so befogged the general intelligence, as to lead to the conclusion, that its literal interpretation would mean a complexity of piping, of vents, and re-venting, of doubtful utility.

One might reasonably conclude in contradistinction to the above, that the happiest of results would be attained by the elimination of every superfluous pipe on the house sewerage system, and that in lieu of a ramification of oversized waste pipes, and attendant stopped-up vents—that all waste-conduits should be properly proportioned to corresponding areas of fixture outlets.

Such conditions would insure quick sharp catapultic water carriage, and project all offensive matter out of the premises at once. Such results would seem to be more sanitary of character than the retention of filthy matter resulting from the installation of the intercepting house trap on the main drain.

All practical plumbers know of the foul character of the house-sewer, back of the main-trap and yet, such are obliged, by law, to install that which not only defeats sanitary ends, but imposes pecuniary hardship upon house-owners as well. It is a positive fact that the cost of plumbing work could be readily reduced fully fifty per cent and better results attained than that of present defacement of interiors of buildings and general tearing out necessary for present installations.

Sharp catapultic water-carriage will instantly cleanse and do the trick every time. The water alone is the cleansing, purifying agent—a fact that should not be for an instant forgotten. Piping is secondary and but a means to an end. Drainage systems that are not fully flushed and scoured by water carriage over every inch of surface are absolute failures—or worse. Study up present codes in the light of the above and see where you are. Very respectfully,

Newark, N. J. William Jacobus.

*Published by John Wiley & Sons, New York, 1910; $4.

THE MAN WHO MADE THINGS MOVE.

By Phoenix.

The day when Brown "showed up on the works" as foreman for Jones both realized that many things hinged upon the next few days.

The men were thoroughly disorganized and disheartened and the lack of system was plainly apparent.

There were three very important problems which confronted Brown:

First, to get "something moving."

Second, to increase the amount of work done.

Third, to cut down expenses in getting the labor performed.

Many a foreman goes at such a job in a rough-and-ready manner, trusting by bluff and bluster to pull through, but Brown was of a different class and had a clear-cut idea of the first points that he wanted to enforce, and so he proceeded evenly on his way.

The men were not changed around at the very first moment, but as Brown became acquainted with the job each man was placed where he could work to the best advantage, according to the skill or knowledge he exhibited.

As time passed Brown proceeded to fire the most expensive hands. By this I do not refer to the men who drew the most money per day, but rather the workmen who made the most blunders and generally, these were the cheapest hands. Brown realized that a cheap hand is a most expensive proposition to have around "the works" and that if a man was not good enough to draw first-class wages, why that man's work would bear watching. Therefore, it was not many days before the amount of work which had to be done over, visibly decreased under such a process of weeding-out as Brown instituted, and the jobs progressed more rapidly from the fact that work did not have to be done twice. Now, by doing away entirely with the sarcastic reflections of which Jones had been free to use, and by praising a good piece of work, or one completed sooner than was expected Brown made the men feel that he was observing and gave credit where it was due. This also had the effect of reducing that feeling that everybody must jump when the boss is in sight, and rendered the men more confident, and ere long some of the bunch got to a pass where they would use their judgment, which was one of the very points for which Brown was playing.

Of course it is a good man who will always do exactly as he is told, but frequently in this business unforeseen circumstances arise which render null and void

all aforesaid instructions, and it is then that the plumber must use his better judgment.

Suppose he has not been developed to that extent? Why, then he must run to the shop to ask for "instructions."

He may be a good mechanic—while some one else does the thinking—but he should not be classed as a first-class trustworthy man unless he can think when the occasion so requires, and Brown and many other foremen find plenty of unthinking workmen "floating" around. The foreman realized that almost anybody can get more or less work out of the men, but that it was better to have quality rather than quantity.

One of the (apparently) slowest plumbers I ever saw really got in more work per week than any other man on the job. How did he do it? Why, he used his sense, saved steps and seldom made a mistake.

When the fixtures were set to a job which he had "roughed-in" things came out right. No tearing out or spreading for "his'n."

Now, Brown did not do any "docking," neither did he say anything about "hitting the works on time mornings." He made it a point to be there first himself and be conspicuous in the tool room on the job.

After the second or third morning it was noticed that the boys got around in time to start in at eight o'clock. Before this some of them had not "showed up" until 8:15 or 8:30. Lots of foremen would have had a war of words and all hands "sore" at the very start. Brown did not. He never said a word. The example did it.

It gives one a mighty uncomfortable feeling to happen in half an hour late quite regularly and experience the look of a boss who knows you are trying to put one over on him, more especially when one knows that there are others who would be glad to have a try at your place.

When men have acquired confidence to go ahead with the work they cease to be an annoyance to the boss by asking too many questions.

When the boss or foreman has to spend all his time watching the entire details and each man, he loses sight of the way the different sections of a large job are going to match up.

As an instance of this I will relate a little incident which took place not so very long ago.

A 10-inch steam-main was to be run through a tunnel.

The foreman supposed that the man he placed in charge of a section of the gang was competent, yet when the main came out at the other end of the tunnel about an eighth of a mile away it was seen that it was nearly a foot too low. This led to an investigation and the whole blamed line had to be raised.

You may say that the foreman was not on to his job; yet he was one of the best I ever saw. He was mistaken in the man he thought could handle the work, but did not fire him. He made the fitter do the raising of the main and afterward it was noticed that this fitter was very careful. Now, I do not state that the mere fact that the fitter had his work to do over made him more careful. It was the way the boss put it to him, that he could be so simple and such a clam as to go ahead and throw in a whole line of big main wrong. Instead of making the workman mad, the boss made him ashamed of himself and he was mighty careful not to place himself again in a place to get laughed at.

A gang of fitters or plumbers are as easy to get along with as a bunch of kids, if they are treated as human beings.

They cannot work at sixes and sevens, no system, no regularity and no one to respect.

Neither will they care for a man who has not sand enough to stand up for what they know is right (whether they practise it or not). A foreman does not have to be a big double-fisted, six-footer either, in order to have command of his men.

One of the best foremen I ever saw was a little fellow about forty-five years old, and far from being a "scrapper." I would guess his weight at about one hundred and twenty pounds. Yet I want to state that every man on the job would fight for that foreman if necessary.

He had but to ask anything to be done, and half a dozen men were jumping to do it.

I saw this foreman every day for nearly six months, and I never heard him curse a man nor speak a cross word. Now, how could this little fellow hold a gang of rough plumbers in such shape? Simply because he treated them as if they were human and not machines. If he wanted speed, he got it by merely requesting and not trying to drive. Such a man was Brown who, when he took control of the shop of Jones, employed some of these methods and brought order out of confusion and chaos.

SALT LAKE CITY TO HAVE SIX PUBLIC COMFORT STATIONS.

It is expected that the city council of Salt Lake City, Utah, acting upon the improvement committee's report, will adopt the plans of former Councilman L. D. Martin for the establishment of six public comfort stations in the business part of that city. These conveniences are to be located at the sidewalk intersections along Main street, two at First South, two at Second South and two at Third South streets. The architect figures the stations will cost about $4,000 each.

ADVOCATES COMFORT STATIONS FOR MACON, GA.

Plumbing Inspector F. X. Daly, of Macon, Ga., advocates the establishment of public comfort stations in that city in his annual report which he submitted last week. After having dealt with the matter at length, he says: "In the development of a modern and beautiful city like Macon, the comfort and convenience of the general public plays a prominent part. One of the chief demands of a city's development is to afford sanitary toilet conveniences for the rapidly increasing population. The need of these accommodations in Macon today is more urgent than in the past and all the requirements may be met without materially adding to the burden of taxation."

ADVOCATES SHOWER BATHS AND PUBLIC COMFORT STATIONS.

Free shower baths in summer, under tents if they cannot be installed in schoolhouses, are advocated by Plumbing Inspector Reuben S. Bemis, Providence, R. I., in his annual report to the board of aldermen just made. He also urges a public comfort station. The shower bath plan, he says, has been used in Baltimore. He gives figures to show that a public comfort station with pay accommodations would bring in a sufficient revenue to relieve the greater portion of the burden of maintenance.

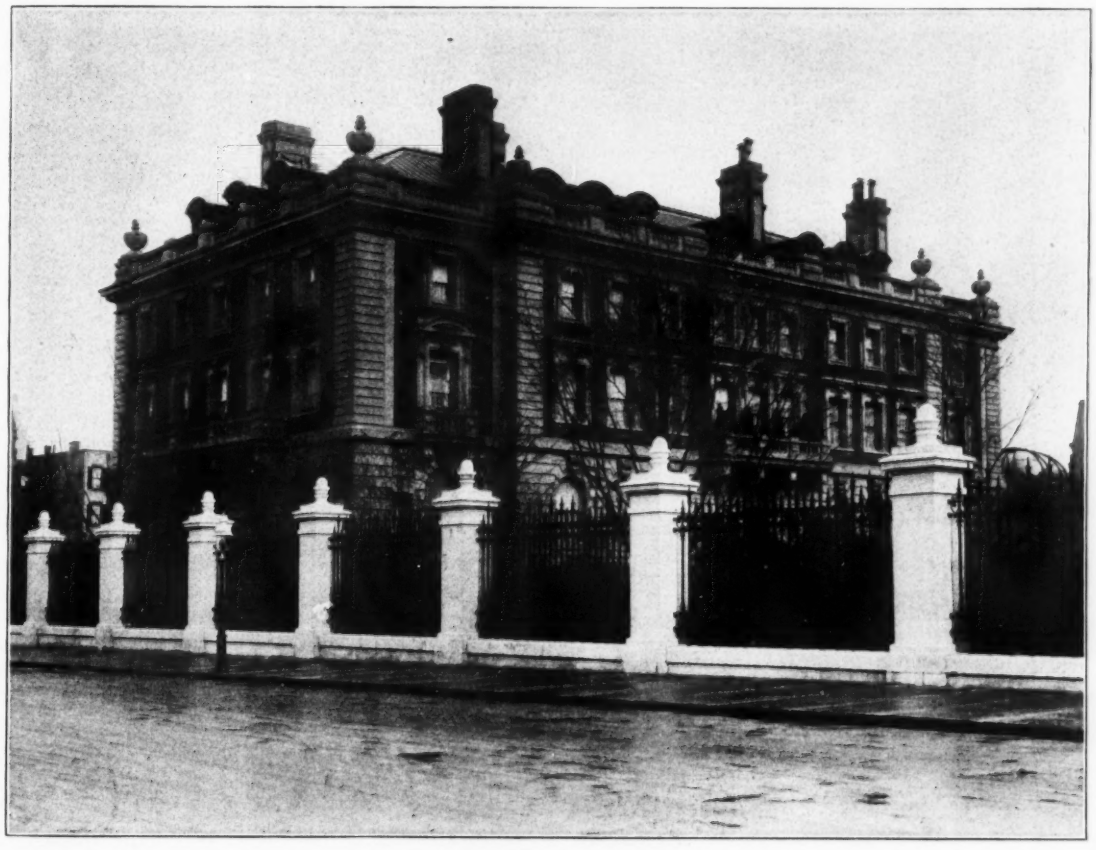
According to the report of Inspector Bemis the number of plans filed in Providence during the year was as follows: Plumbing, 2,038; drainage, 775; total, 2,813. Of the 2,038 plumbing plans 505 were for work in new buildings and 1,533 for work in old buildings. Of the number 1,826 had provision for sewer connections and 212 for cesspool connections. The number of inspections made on plumbing work during the year was 4,400; on drainage 1,358 and on miscellaneous work 405, a total of 6,163. Of the 2,220 plumbing jobs inspected during the year 178 were found defective, or 8 per cent, which is lower than in any previous year. The estimated cost for the plumbing work performed during the year was $516,055.

New York Residence of Andrew Carnegie

"Yet must thou hear a voice."

Where crags of Scotland look down upon a melodious brook that winds in picturesque abandon, but with Nature's stern persistent purpose on an incessant course through the wooded glen of Pittencrieff, a boy—many years ago—listened to the brook's voices as he played near the bankside. The crags are crowned with an ancient abbey, and an old palace wall, that have witnessed processions of triumph, splendor and pure beneficence pass across the ages. The crags are the heights of Dunfermline, a favorite residence of the Scottish kings, home of her heroes, rocky attainment of hard-beset, red-dripping men up from the abyss of battle reaching an unapproachable fortalice, where the low world obeyed Dunfermline! The "Abbey" is the solemn relic of devout ages, aisles of prayer, aisles that dared with God. The Abbey is the Westminster of the North; it is the burial-place of Scotland's monarchs, and the shrine and tomb of Robert the Bruce. The massiveness and gloom of Pittencrieff Glen hears, always, as in Queen Margaret's morning, the voices of the brook. The boy who, some sixty years ago, played near the Scottish burn, heard those voices. The boy was Andrew Carnegie.

Through stormy years, and splendid years, and years of sweeping resistance and persistence and of mowing the way through, it is vigorously certain that the voices of the dear old home burn sang on. "All of the world; yes, but a bit of Fife!" The cheer of the brook whose coronal is Dunfermline of the great deeds, went dusk yet clear through the life of Dunfermline's great son, always talking—that historic brook—of the tremendous undying power that just one life fount may be to a land. No one but God Almighty within the soul of the multi-millionaire, upon whose proudest horizon today arises the hope to be just a man that feels for fellowmen,



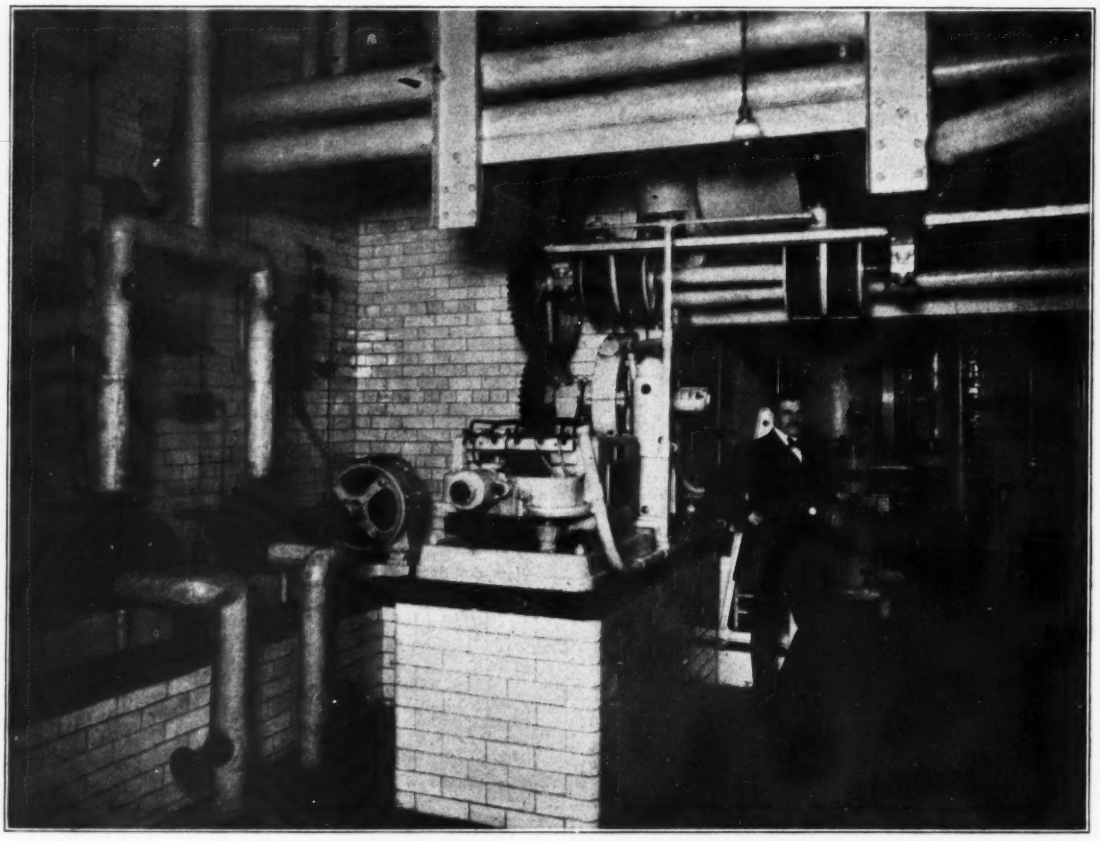
The Imposing New York Residence of Andrew Carnegie.

knows what that Scottish burn talked about to Andrew Carnegie—"the far roll of what in him is sleepless"—of Do—Dare—Bestow—as the brook.

He did.

It has been said that when the Scotsman in Andrew Carnegie gets the best of the American, he goes to Skibo Castle, and lives like one of the lairds of old. When the American in him stirs and clamors, he comes back to "the States," to the great residence on Fifth Ave. and Ninety-first St., New York City. The house is one of the grandest and most imposing in the United States, and yet how simple its lines. Mr. Carnegie did not wish a "palace," but a residence. In the almost severe rigor of buttress and cornice and wall, herein lies the art of its architects, Messrs. Babb, Cook & Willard.* This celebrated firm has given the house an architectural setting that is most graceful to the eye, and which has been planned with consummate ability. The house, which looks like a stately manor-house of Old England, has its secluded calm of gardens, pergola and lawns. These are glimpsed through the high stone railings of the heavy granite urn-crowned posts. It might be a house of the regency, and entertaining Sir Walter Scott, who, amidst all the splendor of London's banquets, and on "George's" right hand, cried out, "If I did not see the heather once a year on the Grampians, I think I should die!"

The Carnegie residence in New York City is close upon 175 ft. in extreme length, and occupies the block between Ninetieth and Ninety-first Sts. Its solid stone basement is of Indiana limestone, with a superstructure of red brick. It faces north and south, and is open on all sides, the principal living rooms being on the south, or garden side. The building is four stories in height, besides a basement and cellar. It encloses about 447,000 cu. ft. of space, of which 229,000 are warmed by the indirect system. The interior plan provides for sumptuous entertaining, for a stately picture gallery, but for the precious privacy of a home life, and the luxury of a great library. Even, as the keys on a keyboard, stand the books in an old library. Touch them with the understanding touch, and you awaken, one after one, the notes that build and build to a mighty harmony of the ages, the inner music of the mind of man, the symphony of thought—Books! Books!



The Pump Room: A Study In Advantageous Use of Glazed Brick.

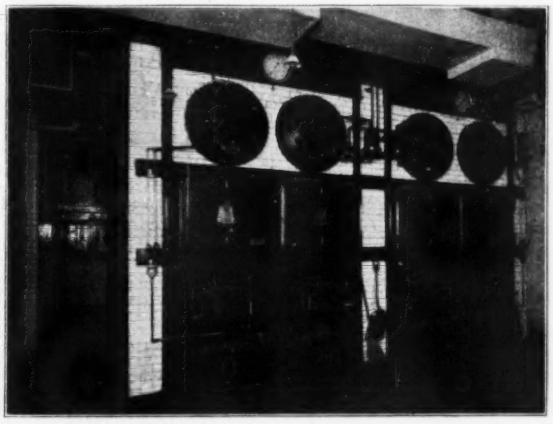
Upon entering the noble residence, we go down at once into the engineering department, conducted by one of the two house engineers whom Mr. Carnegie has graciously appointed to wait upon us, and to help and enlighten us in this one of the largest engineering departments — probably the largest — in any private residence in the United States. It is below the basement proper. At first glimpse we felt a kind of awe. We felt as if we could appropriately use the term "Engineering Esthetics" to this splendid department in the Carnegie residence. There is beauty in a beautiful machine. Says Thomas Commerford Martin, president of the Engineers' Club of New York City, founded and endowed by Mr. Carnegie, "The breath of our civilization is steam, its

*Today the firm of Babb, Cook & Welch.

nerves are steel, its vital forces electricity, its wants are almost wholly supplied by machinery." The mechanical triumphs in this engineering department are not "artistic failures." This engineering department looks to us as if giants (truly of brain) had built it and equipped it —and the fairies had whisked in to finish it. We shall, in a moment, see the glistening and charm in one hall after another.

THE BOILER ROOM.

We turn first into the boiler room. It is a hall, not a "room." The floor is of corrugated iron. The walls are



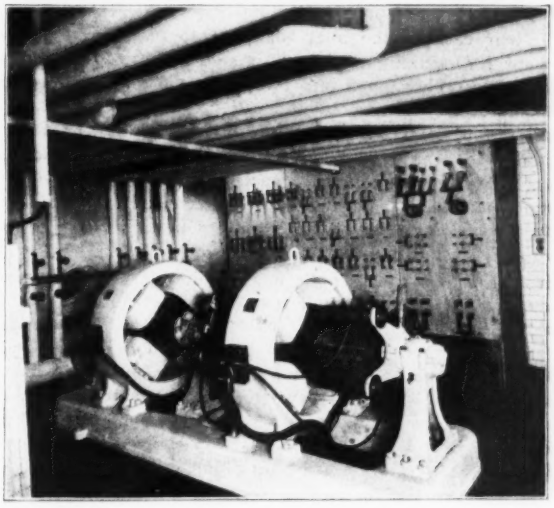
A Twin Fountainhead of Energy.

of white glazed brick. Gleam and sparkle and beauty in this most practical place. There has not been a crack in this brick in eight years; there is not a square corner in this immense boiler room, all of the corners being rounded against dust. The boilers are of the Babcock & Wilcox make, being their wrought-steel high-pressure type, capable of carrying 200 lb. steam pressure, but while built for this high pressure, the efficiency of a Babcock & Wilcox boiler is equally good when used for heating only. Each boiler contains 60 4-in. tubes, 16 ft. long, expanded into steel headers. These in turn are connected to a drum 36 in. in diameter running the length of the boiler. The heating surface is 1,223 sq. ft., and the grate surface 44 sq. ft. each. Each boiler is rated at 122 h. p. In the back of each drum is a connection for the return of the water of condensation. The boilers are suspended from steel frames entirely independent of the brickwork, and are set as one battery with the best quality of masonry. All exposed walls are white enameled brick, and the exposed pipes, valves and fittings on the boiler front are nickel-plated. The boilers were installed by Suter & Sons, New York City.

For warming the conservatory, an independent system of hot-water heating has been installed. Two 10-section Mercer cast-iron hot-water boilers, made by the H. B. Smith Co., have been set up in the boiler room, each boiler required to have 120 sq. ft. of fire surface and 6 sq. ft. of grate surface. The smoke connections are joined into those running from the main steam boilers, but the damper in each smoke connection and the ash-pit doors are controlled by a thermostat to maintain the temperature of the water at some predetermined point. The conservatory is in line with the dining and breakfast rooms, and, of course, has a considerable amount of glass surface. Heating surface is installed both in the conservatory proper and in the gardener's cellar immediately below. Both cast-iron hot-water radiators and wrought-iron pipe coils are used, designed to warm the main room and the cellar below to 70 deg. The distributing piping is carried in the filter room underneath the gardener's quarters, but the expansion tank has an elevated position in a closet in the fourth story. It has a capacity of about 9 cu. ft, and is made of 40-oz. copper. Besides the hot-water boilers, there is also a 10-section Mercer steam boiler, of the same size as the hot-water boilers, in the boiler room, provided to supply steam in summer to the hot-water heating drum for domestic service and to the laundry. There is a turn-table in the large boiler room, on the same plan as a locomotive turn-table. The "switch" is a perfect railroad switch. The cars carry up to the chutes. The coal bins have 200-ton gross capacity.

HEATING AND VENTILATING.

The heating and ventilating plant described below was designed by Alfred R. Wolff (deceased), who was assisted by the eminent firm of Nygren, Tenney & Ohmes, New York City, consulting engineers, and who were successors to Alfred R. Wolff for Babb, Cook & Willard, the architects. The installation for the heating and ventilating plant is one of the most complete in the United States. The heating plant is mainly an indirect one, by means of which the main rooms obtain ventilation as well as heat, but it is supplemented by exhaust fans, which set up a suction from bath and toilet rooms, from the kitchen and laundry, and from rooms which require ventilation. A particular feature of the indirect system is the use of automatically controlled moistening pans



Electric-Power Machine and Switchboard for Running Laundry and Ironing Room.

for regulating the humidity of the air delivered to the rooms, a provision that is important, aside from hygienic and physiological considerations, as a large pipe organ has been built in the house. The air for heating the building is taken in through windows opening into a court, or garden. It then passes over immense filters, 10 ft. high, to be freed from its mechanical impurities, then proceeding over the tempering coils, to be heated by them to about 65 deg. temperature. The tempered air then passes over the air-moistening pans. A moistening pan is placed in each one of the tempering chambers. It

is a basin of 40-oz. copper, about 13 ft. long, 16 in. wide and 12 in. deep, supported by pipe standards to come close to the level of the bottom of the tempering coil. It contains approximately 50 ft. of 2-in. steam pipe, arranged in two separately valved coils and submerged in water in the pan. The coils are to set up an evaporation when it is desired to increase the degree of humidity of the air. The admission of steam to the coil is controlled by a hygrostat so that evaporation is only excited when the humidity falls below, say, 50 per cent. The water level in the pan is maintained constant by a float valve. The common complaint is that steam heat is dry, particularly by people who have catarrh. The cleansed and tempered and moistened air then passes through the main trunk lines and branch ducts, to the indirect stacks. The tempered air can either pass over the stacks into the rooms to be delivered at substantially the same temperature into the rooms, thus serving for the ventilation of the rooms, or it can pass through the indirect stacks to be warmed to a temperature as is required to heat the room. In this way it contains a supply of fresh air, either tempered or warmed, and delivered into the room. The temperature of the tempered air is maintained automatically by thermostat located in the main trunk lines, and the humidity of the air supply is also regulated automatically by a humidostat also located in the main trunk lines. The temperature in the rooms is maintained automatically by thermostat (Johnson service). These thermostats control a double damper, which allows the air to travel through the indirect heating stack when the room requires heating, or it allows the air to pass over the stack when no heating is required, thus always giving a certain fixed quantity of air.

Near each of the inlet chambers there is an arrangement for cleaning the filter screens. This consists of a chamber or box open into the room and connected to an exhaust flue leading to the attic fans. The screen is placed in the box, and with the flue under suction the screen is cleaned with a stiff brush. The rooms containing the filter cleaners have each about 1,200 cu. ft. contents, and the flue from the cleaner is made large enough to provide for 60 changes of air per hour, with the fans running at maximum speed.

At the time that Mr. Carnegie built this residence, the question of moistening air had been given no thought in this country, and it is due to Mr. Wolff's office and to his present successors, Messrs. Nygren, Tenney & Ohmes, that a scheme had been worked out for moistening the air, to whom is due the credit for the introduction of the automatic control of humidity; also to Arthur K. Ohmes is more especially due the successful invention of and installation of the air-moistening apparatus.

There has also been provided a small fan for supplying air to the underground portions of the building, such as the boiler room, pump room and wine room. The wine room is controlled thermostatically, and admitting cold air as required to keep this room at a temperature suitable for the special wines in the wine vault. All the bath rooms, toilet rooms, kitchen and breakfast room have been provided with exhaust ventilation, and two large fans located in the roof space exhaust from these rooms.

THE HYGROPHANT.

This instrument was invented and installed by Charles J. Tagliabue, New York City. The instrument is designed for quickly and accurately determining the percentage of the humidity in the atmosphere without the necessity of reference to tables or calculating, which, when observations are frequently made, is no small work to do it correctly. This hygrophant is an improvement on the ordinary wet-and-dry-bulb hygrometer, as it contains a table which is a part of the instrument for quickly determining the relative humidity. It consists of a standardized wet-and-dry-bulb hygrometer, mounted in a strong copper case, each thermometer being in a separate compartment, thoroughly ventilated; besides, the well of the wet-bulb thermometer is sufficiently distant from the dry-bulb, so that the dry-bulb can not acquire any moisture from the wet-bulb, thereby insuring absolutely accurate indications. The scales are of hard rubber and are non-corrosive. The tubes have sensitive cylindrical bulbs of Jena hard glass, with the scale etched on the stem. Each compartment has a heavy wire door, to protect the tube and scale. The well is of copper, with suitable opening. Between the thermometers there is a bronze casing, containing a revolving cylinder, on which are printed the tables of percentage, carefully compiled from Professor Glaisher's hygrometrical tables. A graduated scale of the reading of the dry-bulb is placed on one side of the opening in case. This instrument is hung near the great filtering chambers, on the west side of the engineering department.

THE PUMP ROOM.

Beyond the boiler room is the pump room. It, too, is a white glistening marvel, for its walls are of enameled white bricks, the pumps are all mounted on white enamel brick foundations, and every machine pump is of white enameled iron. All pumps are worked by electricity. There are two high pressure Quimby pumps for serving the water through the house. These two have each capacity of 25 gal. per minute at 90 lb. pressure, and they are directly connected to 3-h. p., 230-volt, compound-wound General Electric Co's. motors. The speed of these machines is 900 r. p. m. The pump body through which the water is forced by means of the worms are made of composition bronze; indeed, all parts of the pump coming in contact with the water are of bronze or brass, thereby protecting the house from receiving into the waterpipes any rust or iron scale. There is a third Quimby pump, used for pumping the floor drainage into the sewer (the engineering department is actually below the sewer level). This is a sump pump. The capacity of this pump is approximately 150 gal. a minute at 10-lb. pressure, which pressure is due to the distance from the bottom of the sump pit to the highest point into which the water must be discharged so as to flow into the sewer by gravity. This pump is directly connected to a 3-h. p., 230-volt, compound-wound General Electric Co's. motor, and operates from 900 to 1,000 r. p. m. There is still a smaller Quimby house pump, for the washing of the sidewalk. The capacity is 15 gal. per minute, against 40-lb. pressure, which would deliver from the end of 100 ft. of ¾-in. hose, with a ¼-in. nozzle, about 12 gal. per minute, when operating at a maximum pressure of 80 to 90 lb. This pump is directly connected to a 2-h. p., 230-volt, compound-wound General Electric Co's. motor. These pumps, as has been stated, are all mounted on enameled brick foundations, with brass pans under the pumps.

THE FILTER PLANT.

Beyond the pump room is another room or hall, which is devoted to the filter plant and suction tanks. It all glistens like the pump room; its walls are white enameled brick. This filter plant consists of two Loomis-Manning Improved Water Filters, of the double-cylinder

type. The two filters have a combined capacity of from 60 to 100 gal. per minute, and purify every drop of water entering the house. Each filter consists of two vertical cast-iron cylinders used in tandem, the water passing first through specially prepared, quarried, crushed quartz in one cylinder and then through best quality of bone-char in the other cylinder, before passing into use. Thus a pure, white, potable water is furnished for bath, kitchen, laundry and every other purpose. All tanks, boilers, pipes, etc., are kept clean, and faucets, valves, etc., protected from grit. The impurities removed from the water are expelled from the filters into the sewer by a reversal of the flow of water, accomplished by the moving of a single lever over a registered dial. Such cleaning is done at stated intervals and requires only a few minutes. A sight glass is provided into the waste line, so that the wash water can be inspected as it flows into the sewer, thus enabling the operator to determine when the filter is clean.

THE DRINKING WATER.

The drinking water system in the Carnegie residence is separate from the water system used for bathing and other household purposes. For instance, there are separate faucets in the different rooms for drinking water. The water that enters the building is filtered through the large sand filters, and is pure and fit for washing purposes, but not for drinking. So that after the water comes from the sand filters, it passes through two large Berkfeld filters, 21-cylinder type, before it goes to the drinking-water fountains on the various floors. The Bergfeld filter consists of a number of hollow earthenware tubes. These tubes are made of infusorial earth; they are made in Germany. The pores of these filtering tubes are so minute that even typhoid or cholera bacilli are retained on their exterior surface. To cleanse the filter it is merely necessary to wash the deposited impurities from the surface of the cylinders.

THE ELECTRICAL DEPARTMENT.

The electrical and consulting engineers were Messrs. Clark & Macmullen, New York City, who also designed and superintended the installation of the electric cars (elevators), which were installed by the Otis Elevator Co. Charles L. Eidlitz, New York City, was the contracting electrical engineer. The electric heating is used for such household purposes as laundry work, warming food, or water. The electric heating installation is one of the largest, if not the largest, in any private residence in the world. The lighting is on a 200-volt, 3-wire system and is supplied from the street service. The heating and power currents are on 2-wire systems. The power circuits for each motor are taken individually from the main switchboard. This switchboard is of Vermont marble, 2 in. thick. From the switchboard in the sub-basement there are 28 feeder circuits. Each of the motors has its own pair of feeders direct from the switchboard, as have all of the heating circuits that carry more than 10 amperes. The feeders and all wiring from floor to floor are run in a wire-riser shaft located at about the center of the front of the house. All wiring is concealed and where carried in walls or ceilings is enclosed in insulated iron conduits. In most of the rooms, especially above the basement, there are two switches located near doors so that the lights may be lit or extinguished by the most convenient switch. A night service is provided for the halls or stairways throughout the house to burn a certain number of lights all night. A switch control for this system is afforded for each floor, or it may be entirely cut off from the main switchboard. All wall switches are of the double-pole flush type and are placed four feet from the floor. There are 343 of these, besides 17 carbon-break switches for the night service. There is provision of many outlets on the baseboards of rooms to afford convenient extensions, for example, any location of a portable or desk light. In the art gallery there are two circuits entirely used for these baseboard outlets, which will enable a particular lighting to be given to any certain picture. The elevating machinery includes two elevators (Mr. Carnegie has his own private car), two lifts and a dumb waiter.

THE LAUNDRY.

The huge electrical machine seen in the illustration (near the switchboard) runs the laundry, the laundry being an electric laundry, as Mr. Carnegie desired no "steam-odors" in a home laundry department. This machine has to run if a maid should heat one iron only. The machine was made by the Western Electric Co., Chicago. In the laundry, the starch boiler is of water-bath type and of 5-gal. capacity. The inner pan is of heavy hammered copper, average of 15 in. diameter and 7 in. deep. It is supported on a simple iron stand. The heater is placed under the bottom of the water-bath pan and secured and insulated by false bottom. The heater density is 22 watts per sq. in. superficial area at 20 volts. The heater is in two sections, giving full heat and one-half heat. The special one-lid stove is placed beside the starch boiler and of the same design electrically and mechanically as that specified for private bath room. The clothes-boiler apparatus consists of a heated plate 18 in. x 28 in., upon which rests a copper kettle whose dimensions are 18 in. x 28 in. x 18 in. deep. Water is drawn cold into the boiler from a faucet close by and brought to a boil on the plate. For emptying the kettle a tap is provided near the bottom. In the ironing room adjoining the large laundry, there is one special 10-iron heater, which has 10 independent plates of suitable size for laundry irons of from 4 to 9 lb. weight. The plates are supported on an iron stand, suitably panelled for controlling switches. Each section has a density not exceeding 30 watts per sq. in. at 20 volts. The plates heat up with remarkable rapidity, and will heat a cold iron to its proper temperature in from 10 to 15 min., according to its size. Starting with the plate cold the hand cannot be held on it for a full minute after the current is turned on.

THE BUTLER'S PANTRY.

In the butler's pantry there is an electrically heated plate warmer. The material of the external casing is of heavy Russia iron. There are three shelves of the full internal size of warmer and lower shelf located very closely to the bottom and the two upper shelves equally spaced between bottom and top. Each shelf requires a maximum of 5 amperes, at 220 volts.

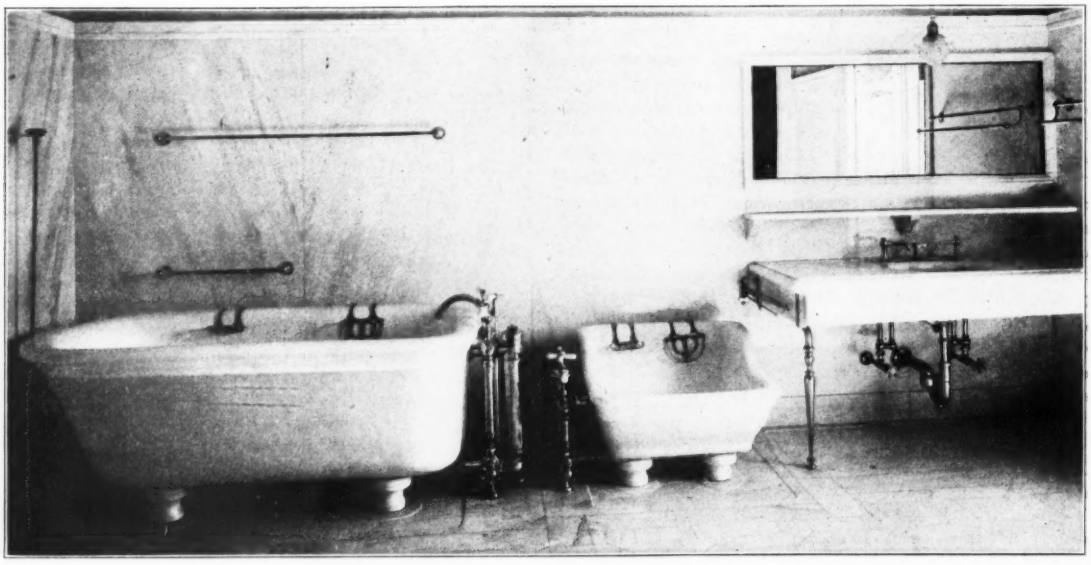
BRUSH ROOM.

In the brush room there is a special 2-iron heater of the same design and construction as the laundry apparatus, but with two heating plates instead of ten. It is mounted on a marble insulating base, so as conveniently to rest on shelf or recess.

THE PLUMBING.

William Paul Gerhard, New York City, was the consulting hydraulic and sanitary engineer for the Carnegie residence and grounds. The piping is extensive and rather elaborate, and great pains were taken to arrange

it neatly and symmetrically, and to make the connections with directness and simplicity. The valves have been grouped, so far as it is possible, close together, so that they can be easily controlled, and are placed in order where their use and sequence is easily understood. Provision is made for a large daily consumption of water, which is drawn from two separate street mains and is used for domestic purposes, fire service, steam boilers, hose washing, lawn sprinkling and spraying the trees. Water for domestic purposes and the steam-heating boilers is filtered and distributed under a street pressure of about 20 lb., and under a direct pump pressure of 55 lb. The former is intended to supply normally all fixtures below the second story, and the latter to supply all fixtures above that level, but both are constructed with duplicate apparatus and cross-connected so as to be interchangeable and prevent any interruption of service through accident or alterations to any part of the house. Branches for sill-cock lines, hose connections and flush



The Boudoir Bathroom: A Model of Artistic Sanitation.

pipes for the fresh-air inlets are taken from the street supplies inside the meters, beyond which they are run on the high basement ceiling to the filter room, which has its depressed floor at the same level as that of the adjacent boiler and pump rooms, about 8 ft. below that of the basement, and 10 ft. below that of the street sewer. This gives a height of about 16 ft. to the ceiling and affords ample headway for the pipes to run above the filters and the tall suction tanks. The room is lighted by electric lamps. All the pipes are suspended by long rods from the steel ceiling beams, but at a sufficient height to provide ample head room beneath them, and are arranged in the same horizontal plane. All the supply and delivery pipes are brought in adjacent parallel lines to the center of the room, and thence that from the Fifth Ave. main is branched to the double filter intended to supply the street-pressure system. Vertical inlet and outlet pipes are run down near the wall and connections made in the usual manner to the operating valve at the bottom of the filter. The filter for the pump pressure is similarly connected and the supplies to both are cross-connected. The delivery pipes from both filters are cross-connected, and the one from the Fifth-Ave. service is branched to a pipe with valved inlets to the tops of the two vertical 50-in. suction tanks, 12 ft. high. The tanks have cross-connected outlet pipes on the front side near the bottom from which a 4-in. suction main is carried under removable cast-iron floor plates to the pumps. On top of each tank there is set vertically a check valve with an inside ball-float connected to it in such a manner that if the water is pumped out faster than it enters from the filters it will fall and the opening of the valve will prevent the formation of a vacuum in the tank. The house pumps deliver directly to a pair of horizontal cylindrical pressure tanks seated in cast-iron saddles on brick piers on the basement floor. These tanks, like the suction tanks, were intended to be galvanized inside, but as this was found to be impracticable they were painted instead. The pressure tanks are set low and are in the corner of the room so that it is necessary to have a special door through the wall on one side to give access to the manhole in the outside tank. The principal connections are made with vertical pipes screwed into the cylindrical shell, and all of them are on the under side on the center line except those for the air-equalizing pipe, which are on top. The inlets and the emptying pipes are near the front ends of the tanks, and the water equalizing pipe and the outlets are near the middle points. The outlet pipes are connected with a double T to the 4-in. header, made up of T's and nipples. It is set horizontally near the floor, and from it the distribution lines are run vertically to the ceiling and hence taken to the feet of the riser lines for the different groups of fixtures. The two tanks are intended to operate together and all their principal valves are normally open, but can be closed so as to cut out either tank and maintain complete service with the other one. It is intended to have the upper parts of the tanks always filled with air to provide an expansion cushion and prevent water-hammer, and gage glasses nearly 60 in. high are provided to show the water-level. The bottom inlets of the gage glasses are connected by a horizontal cross pipe, from which a small pressure pipe is run to a regulator, which automatically controls the operation of the pumps so as to maintain a constant pressure of about 55 lb. in the tanks and throughout the distribution system. If too much air accumulates in the tanks it can be

drawn off through pet-cocks, and the pump can be arranged so as to deliver less air with the water.

The tinned copper hot-water tanks are suspended from the ceiling beams by vertical screw rods with pipe sleeves against which the flanges of the saddle bands are screwed up tight so as to hold them rigidly in place. This secures the tanks vertically, and the connections of short stiff pipes, which are screwed into the reinforced shells brace them firmly in transverse and longitudinal directions.

All sewer-pipes are carried from the ceiling, or are supported on piers of white enameled brick built up from the cellar floor 10 ft. apart. Special provision was made for the subsoil drainage of the site of the house and the adjacent grounds. The cellar excavations and excavations under the moat and gardens were filled one foot deep with broken stone, in which 3 and 4-in. lines of unglazed agricultural drain pipes were laid with open joints. These lines are connected with Y-branches in lines of vitrified sewer pipes with cemented joints which in turn discharge into cast-iron pipes with lead joints which are run to the street sewer. After the pipes were laid, the area outside the house was backfilled with selected earth, and the moats, terraces and gardens were constructed. James Armstrong was the contractor for the plumbing.

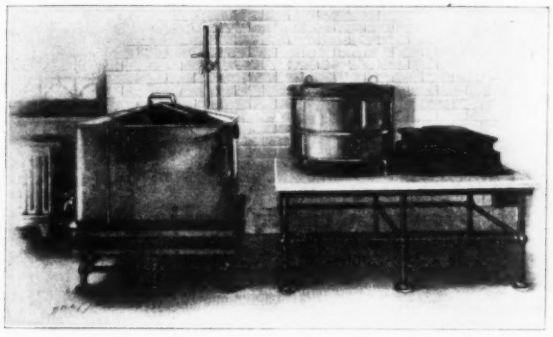
BATHROOMS AND FIXTURES.

The fixtures in the house are by the Meyer-Sniffen Co., and the J. L. Mott Iron Works. All fixtures in the house have their exposed piping, traps, valves and all other metal work made of white metal, which is also used for the legs and corners of sinks and wash-stands, for floor-strainers, escutcheon-plates, towel-racks, brackets, etc. In the basement and in the servants' rooms on the fourth floor, the white metal is polished and is not plated; elsewhere it is silver-plated. All sinks, even for the refrigerator wastes and tell-tales in the basement, are made of porcelain. The bathroom in the basement is 12x20 ft. It has a mosaic floor and white marble wainscot 8 ft. high. At one end are three marble wash-basins with a plate-glass mirror in the wall above them. In this big bath-room there are two water-closets with white marble partitions. The doors are of dark polished oak. A white marble partition encloses a porcelain bath-tub with overhead shower and a duck curtain on a rod. The bathroom has solid oak door, glazed with frosted glass.

The beautiful boudoir bathroom, in the family living rooms, is 20 ft. square with white marble floor and white marble wainscot 6 ft. high. The immense wall mirrors give it a brilliant charm. The bath-tub is of solid porcelain, as are also the sitz bath, the two wash-basins, and the swinging shampoo shower. In one corner a separate inclosure extends to the ceiling for the toilet room. The owner's bathroom is similar. The guests' bathrooms have, like the beautiful boudoir bath-room, inclosed, separate toilet rooms with walls of oak. The other family bath-rooms, the nursery, seamstress' and housekeeper's bath-room are on the same splendid, generous scale and outlay. In the fourth story there are bath-rooms for the women and men servants.

THE KITCHEN.

"The finest army in the world, and officered by the greatest of men, fights and travels on its stomach," said Napoleon. Show me the kitchen of a great residence, and I will tell you, pretty nearly, the quality of work done by the master of that residence. The kitchen of the grand Carnegie residence is, on the whole, the finest the writer has ever seen. Why, it is a hall! I do believe that at the Yule-tide it could roast the historic ox, not to speak of the boar's head and other historic trimmings. One almost looks for the flutes and pipes waiting in the oak doorways to accompany to the banqueting hall the procession of the Yule-log and the silver salvers of good cheer, amidst the shout of the castle's retainers and the lofty flickering and flame of the torches. This magnificent kitchen in the Carnegie residence in New York City has an electric range that is 54 in. long, 30 in. high and 27 in. wide, and is constructed after the pattern of French ranges, of sheet-steel with highly polished trimmings. It has electric ovens, roaster and broiler. The heaters located on the top of the range are 10 in number, and are of different heats, thus adapting them to all classes of cooking. Each heater is controlled by a separate switch. A hood of sheet-iron spreads over range, broilers and ovens, and draws off all odors from any one of them, for it has an eduction electric fan. The floor of the kitchen is of hardwood; its high dado is of oak; its windows are broad as a jolly smile. Its adjoining scullery has extra large marble sinks, and each sink has a large Tucker grease trap, and is provided with hot, cold and drinking water.



The Electrically Heated Laundry Equipment.

Of the generous dimensions of the cold storage room, whose window opens directly on outer air; of the machine shop in the basement for all repairing work; of the magnificent intercommunicating telephone system, and of Mr. Carnegie's own private telephone system—on all this our space only allows us to glance for a moment. We may not even linger in the pastry-cook's kitchen, which adjoins the large kitchen-hall, a quarter dear to the true housekeeper, for if you can make the pies that mother made, a woman is made! We return to the basement quarters on the west side of the house. Here again the heart seems to hear voices.

Voices! In this large, unusually large department where are the living rooms of the help of the household, there must have been voices speaking to the owner of this property, who pledged himself to their suggestions. The voices intimated Generosity in living rooms, Generosity in furnishings, Generosity in Hygiene for his help. Here is the servants' hall, an immense room with oak floor and oak dado—room enough, if you please, for a dance. Here is the servants' dining hall, an apartment that some artists could tuck their whole house into, and really see stars. Here is the great linen room that speaks of liberal-hearted entertaining by one who buckles his tried and true friends to his soul with hoops of steel.

Voices! Mr. Carnegie will always hear them suggest to him. The penalty of greatness? No! The finest reward of personal progress. The measure of my generos-

ity is not what I give, but what I have left. Mr. Carnegie has said that he wishes to die poor. It is his finest utterance. It sounds very much like the dying, and undying, words of One 2,000 years ago, who was the Word.

Voices! Through all the voices of American home life and of "triumphant democracy," the charm of American friendships, the distinction which foreign lands have added to the illustrious list of his rugged Anglo-Saxon titles, there are just two words which the writer thinks are enthroned in the heart of Andrew Carnegie, where they stir as jewels that have pulses. They are words that no rivalry of nomenclature, titles, or starry "Orders" may ever hope to surpass. They are words which glitter on old banners more precious than robes of the Garter. They are words before which one bows the head, not ashamed of a drop on the cheek. They are words of a historic cavalry regiment, of men who gave as give the veins of evening, words which going down into the frenzy of battle and the fading of the day poured through their throats like a thousand Cressys':

"Scotland Forever!"

Lucy Cleveland.

Note: In thanking Mr. Andrew Carnegie for the kindness that he has done to the American people and to the cause of American home sanitation in allowing Miss Lucy Cleveland the exclusive privilege of taking notes for many hours in his New York residence, a privilege not accorded to the clamorous demands of others during many years, and of allowing the writer to have photographs made under her instructions in the magnificent engineering department of the New York house, the writer feels that she scarcely knows how to summon expression to convey to Mr. Carnegie the acknowledgment of his bounty. But the heart has its own dictionary, and its "wireless."

Of historic Celtic ancestry—on the mother's side—the writer has felt to the foundations the preparing of this article.

She desires to thank with true gratitude the firm of Messrs. Babcock, Cook & Welch, architects of the Carnegie residence, for their genial courtesies and able co-operation. Also, her best thanks to Messrs. Nygren, Tenny & Ohmes; and to the firm of Clark & McMullen; and to Mr. Hosea Webster, M. E., of the firm of Babcock & Wilcox; and to Mr. William Paul Gerhard, C. E.; and to Mr. Giese of the firm of Bergfelt Co.; and to the Loomis-Manning Co.; and to Messrs. Quimby Co.; and to Mr. James Armstrong; and to Mr. Chas. J. Tagliabue; and to Mr. Chas. L. Eidlitz. L. C.

Specification for Plumbing Fixtures

For House of Andrew Carnegie, Esq., in Course of Erection at Fifth Ave. and 91st Street, New York City

Babb, Cook & Willard, Architects,
No. 3 West 29th St., New York.

Wm. Paul Gerhard, Consulting Engineer for Sanitary Works, No. 33 Union Square, New York.

In General.

The plumbing contractor shall furnish and fit up in complete working order all the plumbing fixtures described in this specification and enumerated in the schedule of fixtures at the end of this specification as revised up to date.

All plumbing fixtures shall be made specially for this house and shall be of the very best quality of their respective makes.

All fixtures shall be strictly of the type and of the make as called for in this specification.

It shall be understood that no names or printed matter of any kind (except it be specially called for) shall be placed on any of the plumbing fixtures.

BASEMENT FLOOR.

Laundry Tubs.

In the laundry where shown or where directed, the plumber shall furnish and fit up a set of five (5) Meyer-Sniffen Co.'s Imported Royal porcelain high back laundry tubs glazed outside and with roll rim on the front and two sides. The size of each tub shall be such as to admit of the placing of five tubs in the available space, which is 12 ft. 4 in. in the rough. The exact measurements for the size of the tubs shall be taken at the building.

The tubs shall be set on glazed porcelain legs. On the floor under the tubs furnish and set a countersunk marble platform in one piece to extend the full width of the space and to project at least 4 ins. in front of the tubs, and to be set flush with tile floor.

Furnish with the tubs four special hardwood wringer boards and one Excelsior wringer.

The tubs shall be supplied with hot and cold water through the supply lines already specified, which are to have 1-3-in. hot and cold branches to the faucets. The faucets to be the Em Ess Fuller wash tray bibbs.

Waste each tub through 2-in. socket, with rubber lined metal plug and special chain and chain stay, waste pipe and 2-in. S trap, one for each tub.

All exposed metal work at the laundry tubs shall be of white metal, and all the piping shall be the Benedict-Nickel seamless tubing, iron pipe size.

Scullery Sinks.

In the scullery, where shown or where directed, the plumber shall furnish and fit up two Meyer-Sniffen Co.'s Pl. 279 F. Imported Royal porcelain kitchen sinks, the size of each sink to be 42-in. x 24-in. x 7-in., the sinks to have glazed roll rim on front and on the two sides and the back to be raised to receive the marble back 15-in. high, and to be of the width of the sink proper.

There shall be no marble back where the drain board is, as the wall is tiled.

The sinks shall be set on porcelain legs of such length that the top of the sink is 32 ins. from the finished floor.

There shall be three drip boards, one at the extreme end of each sink and the third one between the two sinks, and these drip boards shall be special ash drain boards with metal wall hinges and telescopic legs.

For each sink furnish a wooden sink mat, also furnish for each sink one of Meyer-Sniffen Co.'s Pl. 304 F. grease traps of white metal, the grease trap to stand under the drain boards where directed.

Waste each sink through 2-in. metal strainer, 2-in. waste pipe and connections to grease trap.

Supply each sink with hot, cold and filtered water through three faucets, the same to be the Meyer-Sniffen Co.'s Pl. 302 F. ¾-in. long shank Em Ess Fuller sink bibbs.

All the metal work and piping and trimmings for the scullery sinks to consist of white metal and B-N seamless tubing.

On the floor under the sinks and drain boards the

plumber shall furnish and place a countersunk marble floor slab in two pieces, the same to be full length of drain boards and sinks and to project in front of the sinks about 4 ins.

Kitchen Sink.

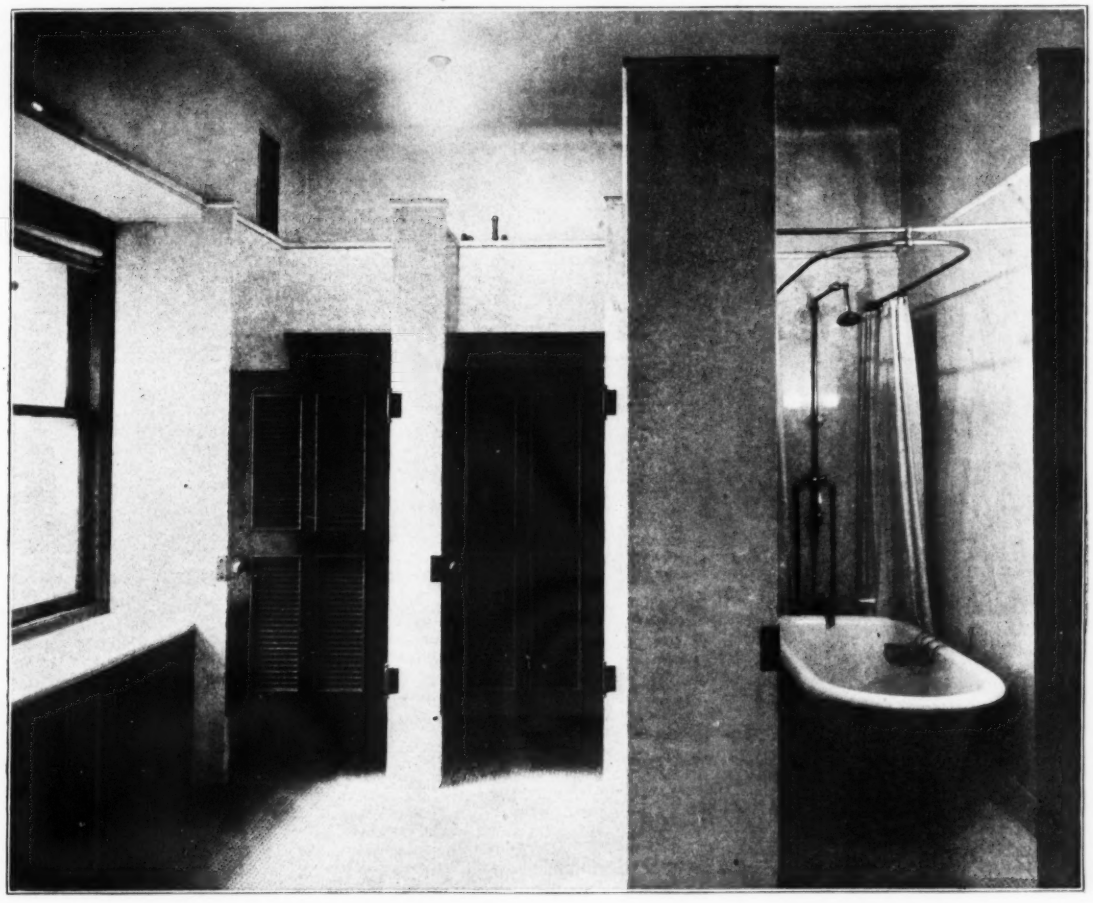
In the kitchen, where shown or directed, the plumber shall furnish and fit up one of Meyer-Sniffen Co.'s Imported Royal porcelain roll rim kitchen sinks, the size to be 42-in. x 24-in. x 7-in., the sink to have two ash drain boards and one Tucker grease trap, to have a marble platform full length of sink and drainboards; to have a marble back 14 ins. high to reach to under side of marble shelf above and the width of the sink only, and to be fitted up in all other respects the same as the scullery sinks. This sink shall have also three ¾-in. tered water through Meyer-Sniffen's Em Ess Fuller ¾-in. sink bibbs.

Provide sink with standpipe overflow. All metal trimmings and pipes at sink to be of white metal and B.-N. seamless tubing. This sink shall not have any grease trap.

Sink for Brush Room.

Where shown or where directed, the plumber shall fit up one of Mott's class "A" Imperial porcelain high back kitchen sinks the size of same to be 30-in. x 20-in. x 7-in. The sink to be as shown in Pl. 832 R., but without any drain boards. The strainer in the sink must be arranged with chain and plug so as to hold water in the sink.

Waste sink through a 2-in. trap and 2-in. waste pipe



Illustrating in a Pleasing Way Effectiveness in Lighting Basement Bathroom.

faucets for hot, cold and filtered water, same as scullery sink. The sink to be set on special porcelain legs. The height from finished floor to top rim of sink to be about 32 ins.

Sink for Still Room.

The plumber to furnish and fit up in this room one white metal sink and drip board. The sink to be 30 ins. long, 20 ins. wide and about 7 ins. deep. The drain board shall be on the left hand side of the sink when facing the sink and shall be of the size shown on plans.

Furnish and place under the sink a countersunk marble floor slab the full length of sink and drainboard, also provide a marble back same length about 18 in. high. Set the sink on white metal legs at height of 32 ins. from floor and provide finished front and side aprons of marble.

Waste sink through a 2-in. waste pipe with a 2-in. S trap and vent. Supply the sink with hot, cold and fil- and supply sink with hot and cold water through ¼-in. pipes and Mott's Fuller faucets.

The sink to be set on white enameled painted legs. On the floor place a countersunk marble platform extending 4 ins. beyond the front and sides of the sink. All metal work, pipes, etc., to be of white metal and B.-N. seamless tubing.

Wash Basin for Steward's Bed Room.

Furnish and fit up, where shown or where directed, a Mott's Pl. 4047 R. Imperial class "A" porcelain lavatory, the size to be 27-in. x 24-in.; the same to have a porcelain back and to be set on porcelain legs.

The wash basin to be fitted up with Mott's "Manhattan" waste instead of the "Unique" waste. The waste pipe to be of 1½-in. pipe trapped by a 1½-in. "Hydric" trap. The basin to be supplied with hot and cold water through ½-in. pipes and Meyer-Sniffen Co.'s Em Ess

swing basin faucets, of pattern as selected by Mr. Carnegie.

On the floor under the wash basin furnish and fit up a countersunk marble floor slab, the size to be the 4-in. wider all around than the size of the slab.

All metal work to be white metal, all piping Benedict-Nickel.

Floor Cesspool in Room Under Conservatory.

The plumber to furnish and fit up in the tiled floor of this room, where directed, one of Tucker's special brass flushing rim cesspools with closed or open strainer as may be directed.

On one of the walls wherever convenient the plumber shall set hot and cold water combination valve for the supply and flushing of this cesspool, and make all connections for same.

Also provide a combination drawcock for hot and cold water.

Servants' Waterclosets.

In the two basement toilet rooms for men and women respectively, the plumber shall furnish and fit up where directed four (4) waterclosets, to be the Hydraulic Specialty Co.'s Pl. 4 A "Pluvic" siphon water closets. The bowls to be plain white bowls without embossing or decoration, of vitreous ware warranted not to craze. The seat and lid to be attached to the bowl with special hinges. The closet to be set with a heavy brass threaded floor plate with metal bolts and washers with white enameled tops. The floor plate to be screwed to the 4-in. brass soilpipe branch. The cisterns to be plain white wood copper lined tanks. The size of tanks to be the special No. 2 with 4-in. valve. Tanks to be enclosed on three sides and bottom with marble, all to be furnished by the plumber. The cisterns to be connected with the bowls by metal flush pipes 1¼-in. inside diameter. Each closet to have chain and pull and chain guide. The chain guides to be fastened to the marble or tile wall with brass expansion bolts. Each closet to be set on a countersunk marble floor slab the full width of the closet space and projecting in front of the bowl about 4 ins.

All metal work and piping at the closets to be of white metal and B.-N. seamless tubing.

The cisterns to be supplied with cold water through ½-in. supply pipes with air chambers and shutoff valves specified.

The closets to be fitted with hardwood seats without lids. The seats to be of piano polished cherry, either natural or dark stained as the architects may direct. The flush pipes to be fitted with metal straps and rubber bumpers.

Servants' Wash Basins.

Furnish and fit up, where directed, in the men's lavatory three, and in the maids' lavatory two marble washstands. The marble slabs to be of choice white Italian marble, to be made in each case in one piece, to be 2½-in. thick in the finish and countersunk ¼-in., to be supported in men's toilet room on recessed metal legs with marble aprons on front and sides. (The maids' run from partition to wall.) The pattern of the leg to be as per Pl. 422 R. of Mott's or Pl. 141 F. of Meyer-Sniffen Co.'s catalogue.

In the floor under the washbasin, furnish and place a countersunk marble floor slab 1½-in. thick.

Provide in the men's lavatory a marble back 18 ins. high, and in the maids' toilet room a marble back and two ends, same to be 1 in. thick with beveled edges. The moulding of the edges of the slab to be as per detail directions of the architects.

The bowls to be white earthenware, vitreous ware bowls 15 in. x 19 in. of Mott's make with center outlet and large patent overflow placed in front; the basin waste to be either the Mott's "Manhattan" waste or Meyer-Sniffen Co.'s "York" waste.

Waste each basin through 1½-in. waste, 1½-in. "Hydric" trap, and vent and supply each basin with hot and cold water through ½-in. supplies with air chambers and through Meyer-Sniffen Co.'s Em Ess swing basin faucets, pattern selected by Mrs. Carnegie.

All exposed piping and metal work at the washstands to be of white metal and B.-N. seamless tubing.

Servants' Bathtub.

In the men's lavatory, where shown or where directed, plumber to furnish and fit up a Mott's porcelain lined iron "Cambrian" bathtub, as per Pl. 108 R. The size of the tub to be 5½ ft. The tub to be decorated in plain white on the outside and to be set on marble blocks instead of iron legs. The tub to have combination Fuller supply with large handle, spout over tub (no bell supply), and shampoo supply pipes to floor and extra large "Unique" waste.

The tub to be set on a countersunk marble platform 3 ins. wider and longer than the tub. Waste the tub through a 2-in. waste and connect with the trap already provided for.

Supply with hot and cold water through ¾-in. pipes.

Also fit the tub with an approved overhead inclined rain bath or shower similar to Pl. 255 R. with special mixing valve for hot and cold water, also with approved curtain rod and curtain.

All the exposed metal work and piping to be of white metal and B.-N. seamless tubing.

Refrigerator Safes.

The plumber shall furnish and fit up in the two spaces shown for refrigerators (size about 5 ft. x 3 ft.), marble floor slabs 4 ins. thick and countersunk at least 2 ins. Provide in the marble slab a white metal detachable strainer and connect the same with 1½-in. waste already provided for.

Arrange a hot water faucet for the flushing out of the refrigerator safe, the same to be the Meyer-Sniffen Em Ess Fuller hose bibb.

FIRST FLOOR.

Toilet Room Watercloset.

Furnish and fit up where shown on plans a Hydraulic Specialty Co.'s "Pluvic" siphon water closet, the same in all respects as the closet specified for the basement with the addition of a cover for the seat. The seat and lid to be of piano polished choice mahogany.

The flush tank to be of hard wood with plain round edges and finished in white enameled paint. The pull for the closet to be cut glass or white genuine ivory pull. The closet to be set on a full size marble floor slab.

All metal work and piping which is exposed at this fixture shall be of white metal and B.-N. seamless tubing, which shall be silver plated in the best possible manner.

Wash Basin.

Furnish and fit up, where shown on plans, a marble lavatory, of size as per plans. The bowl to be a white china bowl of Mott's make with "Manhattan" waste or Meyer-Sniffen Co.'s "York" waste as may be directed.

The basin to have metal legs of pattern as per Pl. 422 R. of Mott's or Pl. 141 F. of Meyer-Sniffen's catalogue, and marble aprons, also marble floor slab, 16-in. marble back and ends if required.

Waste the basin through 1½-in. waste pipe with "Hydric" trap and vent.

Supply the basin with hot and cold water through ½-in. pipes and Meyer-Sniffen Co.'s Em Ess swing basin faucets as selected by Mrs. Carnegie.

The marble to be the choicest quality Blanco P. absolutely free from any defects.

All exposed metal work above the basin slab to be silver plated in the very best manner.

Conservatory Fountain.

Will be determined on later and the plumber under the present contract supplies the waste and supplies for the same.

Conservatory Sink.

On the west side of the conservatory, where directed, furnish and fit up a white metal sink, to be of size as per plans and about 8 in. deep, the same to be provided with metal stopper and chain and overflow, the sink to be set in the marble counter provided under another contract. Waste the sink through 2-in. pipe, trapped by 2-in. "Hydric" trap.

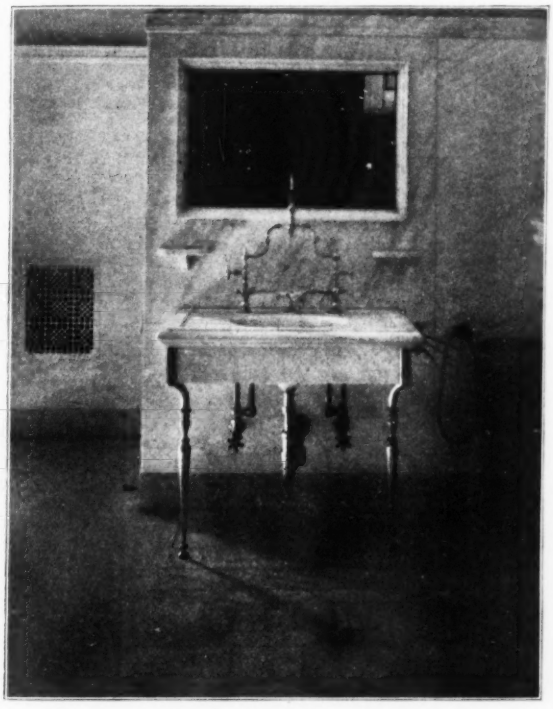
Supply with hot and cold water through ½-in. pipes and pantry faucets.

All metal work and piping to be of white metal and B.-N. seamless tubing.

Under the conservatory sink provide a combination self-closing Meyer-Sniffen "Dougherty" cock for drawing hot and cold or mixed water.

Pantry Sink.

In the butler's pantry furnish and fit up a special Meyer-Sniffen Co.'s white metal double pantry sink with drain board of same metal. The left-hand sink shall be 18 in. x 16 in. x 8 in. deep with recess in back for standpipe overflow; the right-hand shall be 18 in. x 19 in. and of same depth, also with recess. The drip board shall be on the left-hand side only and shall be plain and not



Showing a Bathroom Swinging Shampoo.

fluted. The front and back ends of drain board to have raised, rounded edges.

The sink shall be set at a height of about 35 in. from the floor, or as near this dimension as the window sill will permit. The space under the sink shall be lined, floor, back and sides, with marble, the platform to be 1½ in. thick and countersunk and the sides 1 in. thick. Provide a 6 in. marble back and cap over sink, also ends to correspond. The exposed front of the sink shall be lined with white metal.

All corners of the sink to be as much rounded as possible.

Waste the sink through 2-in. waste pipe, 2-in. S trap and vent.

Supply the sink with hot and cold water through Meyer-Sniffen's Fuller combination cock with a swing spout supplying either sink, the same to be of special design, as per sketch in engineer's office.

Provide where directed a third faucet for filtered water, the same to be Meyer-Sniffen's Em Ess Fuller pantry faucet.

Refrigerator Waste.

The pantry refrigerator safe to be of marble, and to be fitted up in all respects the same as described for the basement refrigerator.

SECOND FLOOR.

Nursery Bathroom—Water Closet.

To be the Hydraulic Specialty Co.'s "Pluvic" siphon closet, Pl. 4 A, to be in all respects the same as the toilet room water closet on the first floor.

Wash Basin.

To be a 5-ft. marble washstand with two plain white china bowls with Mott's "Manhattan" or Meyer-Sniffen "York" waste. To be of size as shown on plans, and in all other respects to be fitted up the same as the wash basin in the first floor toilet room.

Bathtub.

To be a Meyer-Sniffen's Pl. 28 F, porcelain lined iron "Metropole" bath, 5 ft. 9 in. long, finished outside in white enamel, to be set on glazed porcelain block supports. To be fitted up with the "York" waste, waste with cross-arm handle and a 3-in. overflow and strainer. To waste through a 3 in. x 2 in. tapering connecting piece connecting with the 2-in. trap under the floor already provided.

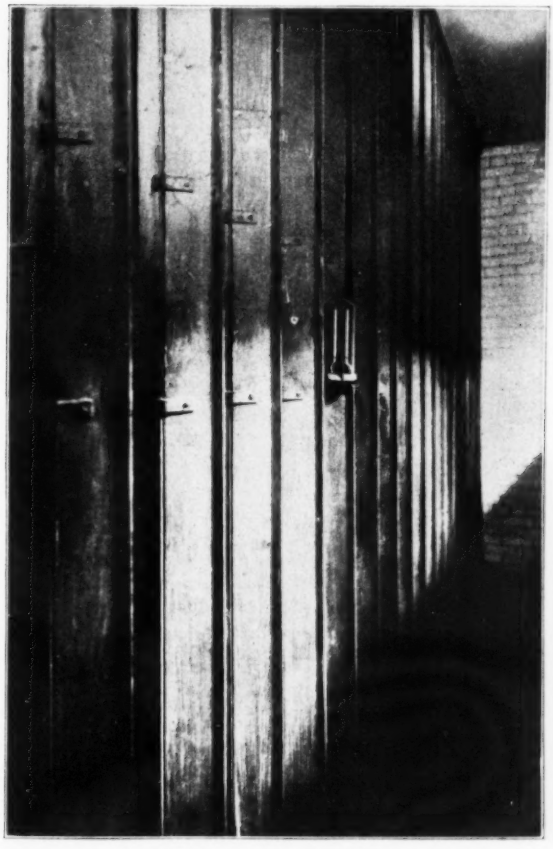
Supply the tub with hot and cold water through ¾-in. supplies and mixing cock with Fuller large porcelain handles, with one spout over the tub, the spout to be arranged with Electra coupling and spray attachment.

The bathtub to be set on a full size countersunk marble platform and to have all exposed metal trimmings and pipes silver-plated over the white metal and B.-N. seamless tubing.

Sitz Bath.

Furnish and fit up, where shown, a Mott's Imperial class "A," Pl. 53 R. roll rim sitz bath, decorated outside plain white, with Fuller combination supply fittings, pipes to floor. "Unique" waste with cross-arm handle and glazed porcelain block feet.

Waste through a 2-in. waste pipe connected with the trap already provided and supply with hot and cold



The Air-Cleansing Filter Chambers.

water. Set the sitz bath on a countersunk full size marble platform, and all exposed metal and fittings to be silver-plated over the white metal and B.-N. seamless tubing.

GENTLEMAN'S PRIVATE BATHROOM.

Water Closet.

To be in all respects the same as specified for the first floor toilet room.

Bathtub.

To be a Meyer-Sniffen Co.'s porcelain lined iron "Metropole" tub, 6 ft. 3 in. long, fitted in all other respects the same as specified for the nursery bathroom.

Wash Basin.

To be a marble wash stand of size as per plans, and to be fitted up in all respects the same as specified for the first floor toilet room.

Needle and Shower Bath.

Omit this fixture entirely. Omit the roughing for the same already contracted for and give credit for the omission.

LADIES' PRIVATE BATH ROOM.

Water Closet.

To be the same in all respects as the one for Mr. Carnegie's bathroom.

Bathtub.

Furnish and fit up, where shown or where directed, a Mott's Pl. 2086 R. Imperial porcelain class "A" roll rim French bathtub of size to fit the available space, and if possible to be 5 ft. 6 in. long, not including the fittings. The bathtub to be set on porcelain blocks. The tub to have a Meyer-Sniffen's "York" waste with cross handle, Fuller mixing valves, with large porcelain handles and one spout over the tub furnished with Electra coupling and hand spray. The tub to be provided with a 3-in. overflow and to waste into the 2-in. tray already provided for under the floor.

The tub to be decorated plain white on the outside and not to have any beads; to be set on a countersunk marble floor slab. All metal work to be silver-plated over the white metal and B.-N. seamless tubing.

The contractor to buy this tub from Mott's and to send it to Meyer-Sniffen to be fitted up with the waste and supply fittings specified.

Sitz Bath.

To be the same fixture as specified for the nursery bathroom in all respects.

Wash Basin.

To be a marble wash stand of size as shown on plan and to be fitted up in all respects the same as Mr. Carnegie's washstand.

Shampoo Washstand.

To be a marble washstand of size as per plans, to be placed exactly where shown on amended plans. The basin to be the same as all other china basins, but the supply and shampoo fixture to be as per Pl. 67 F. of Meyer-Sniffen with Em Ess ground key swing basin faucets and with special shampoo fixtures, as shown in plate specified, but to have also a hand-spray with shutoff.

Nursery Pantry Sink.

To be a white metal sink, size 14 in. x 20 in. with German silver drainboard of size as per plans, to have marble ends over the drainboard and marble platform on the floor, also wall and side lining under sink. Provide also a 7-in. marble apron.

To waste through a 2-in. waste pipe with a 2-in S trap and 1½-in. vent. To be supplied with hot, cold and filtered water through ½-in. pipes and three Meyer-Sniffen Em Ess Fuller pantry faucets.

The sink to be fitted with a recess and a standpipe overflow.

Housemaid's Slop Sink.

Furnish and fit up, where directed, a Mott's Pl. 806 R., class "A" Imperial porcelain "Richmond" slop sink with iron trap standard, painted outside in white, and enamel glazed on the inside, with plain white wood, round cornered copper-lined cistern, cased with marble, with No. 2 flush pipe, brackets, guide rod, porcelain pull and combination Fuller faucets with stiffening bracket.

Set the sink on a countersunk marble platform projecting 4 in. over the sides and front of the sink, the sides of white metal and B.-N. seamless tubing.

Supply the cistern with cold water, the top sink with hot and cold water and filtered water, for which a third faucet must be arranged, according to detail to be determined upon later.

Nursery Pantry Refrigerator.

To be the same in all respects, except size, as the one in the butler's pantry.

THIRD FLOOR.

GUESTS' BATHROOM, SOUTH SIDE, EAST END.

Water Closet.

To be the same as water closets of second floor.

Bathtub.

To be 5 ft. 9 in. Meyer-Sniffen Co.'s enameled iron "Metropole" tub, fitted up in all respects as the one for nursery bathroom.

Wash Basin.

To be of size as per plan and to be similar in all respects to those of second floor.

Provide countersunk marble floor slabs under all three fixtures. All white metal fittings or B.-N. seamless tubing to be specially silver-plated.

SPECIAL PRIVATE BATHROOM.

Water Closet.

The same in all respects as those for the second floor.

Sitz Bath.

To be Mott's Imperial porclain class "A" sitz bath, the same in all respects as the nursery sitz bath.

Bathtub.

To be Meyer-Sniffen Co.'s 5 ft. 9 in. "Metropole" tub, the same in all respects as the one for the nursery bathroom.

Wash Basin.

To be of size as per plans and to be otherwise the same as those for the second floor.

GUESTS' BATHROOM, SOUTH SIDE, WEST END.

Water Closet.

To be the same as those on the second floor.

Bathtub.

To be a Mott's Pl. 2086 R. Imperial porcelain class "A" bathtub, the same as the one for Mrs. Carnegie's bathroom, but 5 ft. 6 in. in size.

Wash Basin.

To be the same in all respects as the other wash basins on second and third floors.

Shower and Needle Bath.

To be a marble stall of size as per plans, to be 7 ft. high, 1½ in. thick, to have a 3 in. countersunk platform, and double bases 4 in. high in front and on free side, the base to be rabbeted out for the lead.

The sheet lining of the floor safe to be carried up on the two walls back of the marble stall to the full height of the marble and the entire stall to be made and proved by test watertight.

In the marble stall furnish and fit up one of Mott's Pl. 237 R. combination Needle and Tubular Shower, but without the liver sprays and without bidet.

Furnish in the floor a 5 in. metal waste strainer with 3 in. waste coupling.

Provide the needle bath with highest class thermometer and with all required valves and mixing chambers.

Provide in front of the stall a metal curtain rod and best quality rubber lined or other approved curtain.

The shower to be fitted with hot and cold water from the large supply pipes already specified.

All metal trimmings and pipes to be of white metal and B.-N. seamless tubing.

SEAMSTRESS' BATHROOM, NORTH SIDE.

Water Closet.

To be the same as all other closets on this floor.

Bathtub.

To be a Mott's porcelain lined iron "Cambrian" bathtub, decorated white on the outside, set on metal blocks, the size to be made special to fit the available space, namely, 4 ft. 6 in. over all, and the tub to be fitted up in all other respects the same as the servants' bathtubs on fourth floor.

Wash Stand.

To be a Mott's 4007 R. Imperial porcelain class "A" lavatory 24 in. x 22 in., fitted either with "Nassau," or "Manhattan" waste; to have Imperial porcelain back

and white enameled painted iron legs. The hot and cold supply faucets to be Meyer-Sniffen's Em Ess swing basin cocks.

Under all three fixtures furnish countersunk marble floor slabs and make all exposed metal trimmings and pipes of white metal and B.-N. seamless tubing.

Slop Sink.

Furnish and fit up, where directed, a Mott's flushing rim Imperial class "A" slop sink, fitted up in all respects the same as the one in second floor house maid's closet.

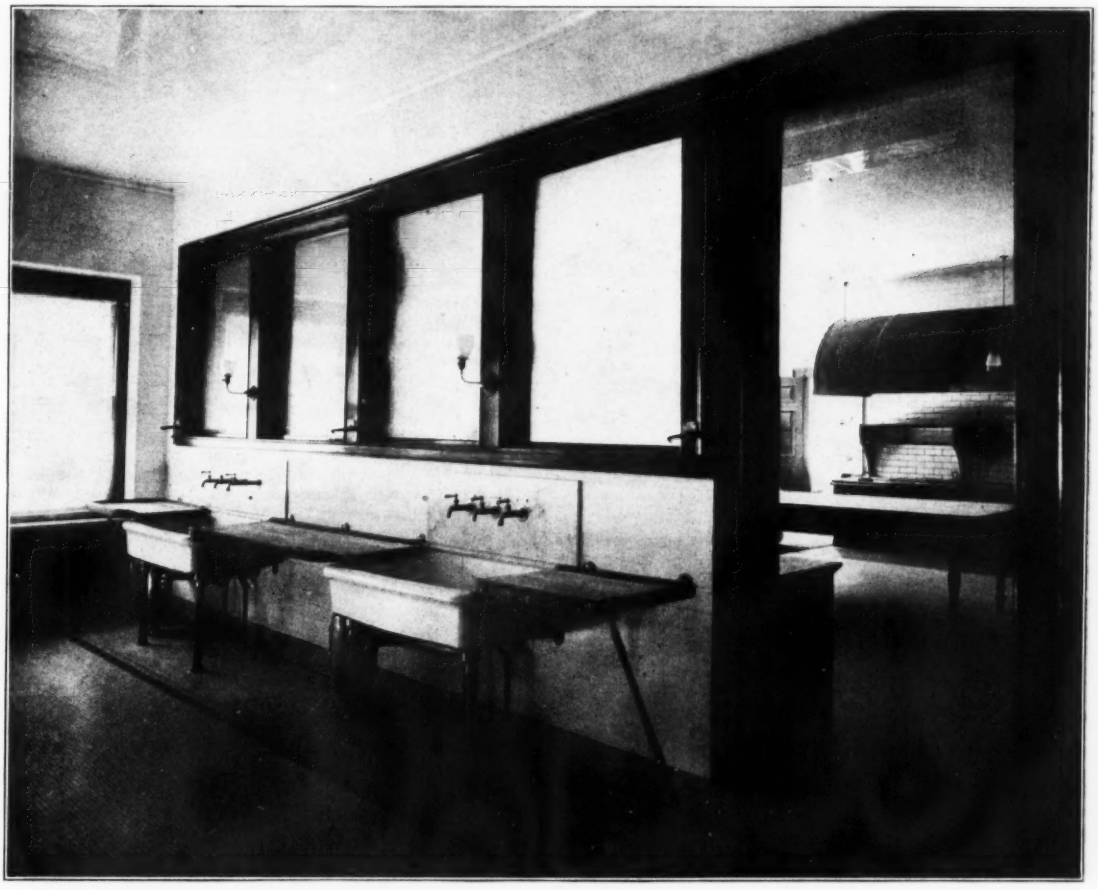
FOURTH FLOOR.

Water Closets.

In men's toilet room furnish and fit up one, and in maids' toilet room, two water closets, the same to be in all respects as specified for basement water closets.

Bathtubs.

In men's and maids' toilet rooms furnish and fit up



The Kitchen, Electric Range and Scullery; with Unique Grease Extractors.

two Mott's porcelain lined iron "Cambrian" Pl. 108 R. bathtubs, decorated white on the outside, and set on marble blocks instead of iron legs. The tubs to be 5½ ft. long and to be fitted up in all respects the same as specified for basement bathtubs.

Slop Sinks.

In both men's and maids' toilet rooms furnish and fit up, where shown on plan, one slop sink, to be in all respects the same as specified for second and third floor.

Wash Basin.

In both the men's and maids' toilet rooms furnish and fit up a double wash stand of marble, to be 5 ft. 6 in. long, with countersunk marble floor slab, aprons and 18 in. backs; also ends in the maids' toilet room.

The wash basins to be fitted up in all other respects the same as specified for the basement washstands.

GENERAL REQUIREMENTS TO THE PLUMBING FIXTURES.

Marble Work.

The marble furnished under this contract for the plumbing work shall be of two kinds, as follows:

For all servants' toilet fixtures and sinks in kitchens, pantries, scullery, still room, brush room and in laundry, the marble shall be a choice quality of light veined Italian marble, absolutely free from any dark spots or veins.

For owner's and guests' bath and toilet rooms the marble shall be the highest and choicest obtainable grade of Blanco P. marble, which must be perfectly white and without any dark veins, spots or streaks.

The plumbing contractor shall submit to the architects samples of each kind of marble, the same to be about two feet square and not less than 1½ in. thick, polished on one side, left unfinished on the other, and with at least one edge left rough to show the texture of the marble.

It shall be understood that in all bath or toilet rooms where there is marble wainscoting around the walls, the plumber shall arrange to order his marble for the plumbing fixtures from the marble contractor selected by the builder for the other work.

In all other cases the name of marble sub-contractor shall be submitted to the architects when the samples are submitted, and no marble work shall be ordered before sub-contractor has been approved by the achitects.

The marble work shall conform to the following general requirements:

All marble work shall be sharply and neatly moulded

according to directions or detail sketches furnished by the architects.

All marble work must be fitted, set up and joined in the most careful and workmanlike manner. Particular attention shall be paid to the neat finishing of all marble joints.

All surfaces and edges shall have a high polish and finish, including the marble platforms under all fixtures.

All marble to be free from any imperfections, stains, flaws, sand holes, etc.

There shall be full size countersunk marble platforms under all plumbing fixtures.

For sizes of marble basin slabs see the ¾-in. scale detail drawings in architects' office.

All basin slabs which are over 3 ft in length shall be 2½ in. thick in the finish, those smaller than 3 ft. to be ¾ in. thick in the finish.

All backs, ends, aprons, etc., to be 1 in. thick.

Sheet Lead Safes.

The plumber to underline the entire bath rooms of the second, third and fourth floors, also the housemaids' slop sinks and pantry sinks, and the first floor toilet room, with 4 lb. sheet lead, turned up at least 3 in., the same to be pitched to a single waste outlet in all rooms, except Mr. Carnegie's bathrooms, which shall have two outlets. These sheet lead safes must be made perfectly water-tight and shall be tested and proven so before they can be accepted.

Water Closets.

All water closets throughout the house shall be the same, except that those for servants in separate compartments will not have any lids.

Water Closet Tanks.

All tanks for slop sinks and for water closets for servants shall be cased with marble by the plumber and the tanks shall be plain white wood round cornered tanks.

For all bath rooms and for the first floor toilet room, the tanks shall be enameled painted white.

All water closets and slop sink tanks to have full ½-in. supply couplings. All flush pipe couplings to be at least 1¼ in. inside bore.

Water-Closet Seats.

All servants' water-closet seats to be of polished cherry.

All water-closet seats for first floor toilet room and second and third floor bath rooms shall be the choicest quality mahogany seats with covers, to have a high piano polish.

White Metal and Benedict Nickel Finish.

All exposed metal work, pipes, traps, legs, trimmings, screws, holdfasts, flush pipes, brackets, etc., shall be made of special white metal and the piping of the B.-N. seamless tubing.

For the toilet and bath rooms of first, second and third floors, this white metal shall be silver plated in the very best manner and as follows:

At the washstands all metal work above the slab.

At the bathtubs, sitz baths and water closets, all exposed trimming and piping throughout.

The shower bath on the third floor shall be finished in white metal.

In General.

All fixtures throughout shall be provided with separate shut-offs on the hot and cold and filtered water supplies.

All branch supplies shall be provided with effective air chambers.

All wash basins, other than those of porcelain, shall be attached to the marble basin slabs by letting the basin rim into the rebated recess on the underside of the marble.

Attention is called to the special height at which the pantry, kitchen and scullery sinks are to be set.

All bathtubs throughout shall be provided with extra large overflow pipes, and in the case of the Mott's "Cambrian" tubs, the "Unique" waste shall be made specially large to comply with this requirement.

The filtered water specified originally for the waste stands of the second and third floors shall be omitted, but filtered water must be supplied at all pantry and slop sinks, and also at the kitchen scullery and still room sinks.

Attention is called to the requirements of the specification that all the wash basins of the first, second and third floors are to be of Mott's Imported fine china and not of earthenware.

The decision as to whether Mott's "Manhattan" or Meyer-Sniffen's "York" waste shall be used at the wash basins will be made after a full sample basin with "Manhattan" waste has been fitted up for inspection and tested.

All water closet chain guides and any other metal work attached to tiled or marble walls shall be fastened with best quality brass expansion bolts.

Found in the Trap

The Northern Heating & Plumbing Co., Eveleth, Minn., has secured the contract for the installation of a steam heating plant in the new Murnik block at Coleraine, Minn.

Parish Bros. have opened an up-to-date plumbing establishment in the Mikesell building, Charlotte, Mich.

Master plumbers at Decatur, Ill., have served notice on architects and contractors that in the future they will figure contracts for plumbing, heating and gas-fitting direct with the owners, thus avoiding the misunderstanding and dissatisfaction so common with the old method.

J. Oscar Smith, Moberly, Mo., has been awarded the contracts for the installation of steam heating systems in the residences of W. H. Christie and Frank Forney in that city.

William Harris has been appointed plumbing inspector at Petaluma, Cal.

Present-Day E-Vents

E. H. Oleson, Benson, Neb., has withdrawn from the plumbing business and opened a real estate office in that town.

The Clefton Plumbing & Heating Co., Owatonna, Minn., has changed its name to The Clefton Co., and incorporated its business with a capital of $15,000. The incorporators are C. J. Clefton and G. J. Clefton, both of Owatonna, and Sewall M. Clefton, Austin, Minn.

Martin & Wigman, Green Bay, Wis., have been awarded the contract for the installation of a heating and ventilating system in the new Rock county almshouse at Janesville, Wis.

Fred P. Futter has opened a plumbing establishment at 501½ S. Lafayette St., South Bend, Ind. Mr. Futter recently resigned as plumbing inspector in that city, a position he had held for seven years.

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SPECIAL NOTICE TO READERS.

Our readers are invited to send in articles on any topics covering sanitary interests as outlined above. Photographs and drawings with descriptions of special interest to plumbers and steam-fitters are welcomed. "Domestic Engineering" pays at space rates for all articles, notes, criticisms and news data so contributed.

PACIFIC COAST COMMENTS.

The rainy season is on in full force in San Francisco and new contracts are rather scarce in the plumbing line. However, it may also be noted that plumbers here are not as anxious to take on new work as they have been in the past, at least, not under the same conditions. There are very few who will now accept a contract from a general contractor unless the contractor be one very well known, for within a week's time the new rule in regard to master plumbers taking contracts from general contractors will be placed into effect, and plumbers prefer to wait until then to secure new jobs. The spring season is expected to be a very active one judging from the large number of new buildings that have been planned, and from now on the growth of the city will be a steady instead of an abnormal one. While there will be some large buildings erected, most of those now to go up will be of medium size and this will mean that the plumber with a small shop will be placed on more of an equal footing with the possessor of the large establishment. There are those who are decrying proposed plan of the plumbers to deal with owners only, and these are free to make the declaration that the plan will not prove a success and that owners will be called upon to pay higher prices for their work. However, it is being pointed out, on the other hand, that the city is now enabled to get its plumbing work done better and cheaper than it could when the work was let with a general contract, from the reason that responsible plumbers now bid for the work and being sure of obtaining their money when the work is completed, name as low a price as possible. State work is also now segregated, and this has resulted in a great saving as compared with the previous system. Building contractors are using all of their influence to make the proposed plan of the master plumbers prove a failure, for there is no doubt but that they have profited to a great extent in the past by making a profit on the work done by the plumber.

During the course of the coming year there will be an unusually large amount of work done on public and semi-public buildings in San Francisco, and most of this work is of such an urgent character that much building will be commenced as soon as spring weather sets in. There are still a number of new school houses to be erected, fire and police stations, the Hall of Justice, an addition to the Ferry depot, and a number of club buildings, which in themselves will cost several million dollars.

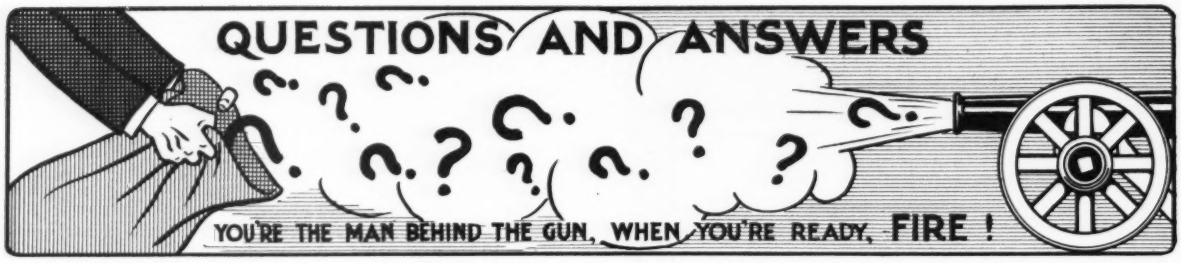
There is still considerable agitation manifested here in regard to the heating of the school buildings in San Francisco, and Superintendent Roncovieri has given orders to those in charge of building to investigate at once the advisability of specifying hot-air heating systems in the new buildings instead of the steam and hot-water systems now in use. At present it is not planned to make any changes in the systems already installed, but it is desired by the head of the school department to make a commencement in the line of providing what he terms "safer heating apparatus."

Work on the building being erected by the Claus Spreckels interests at Third and Stevenson streets, San Francisco, which has been delayed for some time, is to be commenced again at once and a number of contracts have just been let. Frank J. Klimm has secured the plumbing contract on his bid of $3,926. Mangrum & Otter have contracted to do the heating and ventilating work in the structure for $2,420. Work on this building will be rushed as a large portion of the space has been let already.

Contracts are now being let for an addition to the Children's Hospital and Training School for Nurses at California St. and Maple Ave., San Francisco. The Robert Dalziel, Jr., Company has secured the heating and ventilating contract for $43,500. This work is to include a sterilizing plant and will be one of the finest bits of work ever done in Frisco. The plumbing work is to be installed by J. Looney for $12,764, and the kitchen equipment will be furnished by W. W. Montague & Co.

The Pacific Blower & Heater Co., San Francisco, is quite busy with a number of out-of-town jobs at the present time and also has considerable work on hand in its own city.

The contracts for the erection of the new hall of records at San Diego, Cal., will shortly be awarded, but it is practically settled that the heating contract for the new structure will go to A. H. Julian on his bid of $2,965. Rohde Bros. submitted the lowest bid for the plumbing, their bid being $914.



SAYS JOB WILL NOT WORK WITHOUT PRESSURE.

Editor "Domestic Engineering": I note with interest the article in your issue of January 15th, with a sketch by F. H. C., of Everett, Wash. Quite a few of the larger residences here have finished rooms in the base-

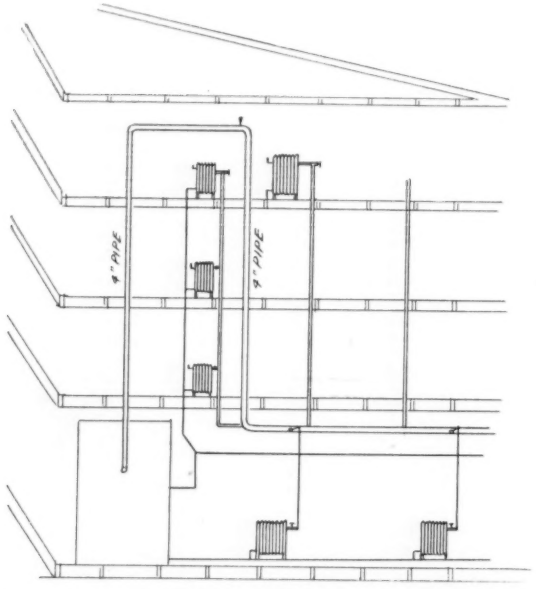


Fig. 1. Sketch of Hot-Water Heating System, Submitted by F. H. C., Everett, Wash.

ment, and consequently this question of supplying radiators on a level with the boiler has come up often.

Answering his question as to whether this job, as shown in his sketch, Fig. 1, would work, I don't think it will. That is, as to heating the radiators on the first floor. If this 4-in. pipe were to supply the first floor only, and another main run to supply the remaining floors, there would be no question as to its working (See sketch enclosed, Fig. 3, left side of boiler), providing, of course, the mains were sufficiently large to supply the radiation. The object of running the main to the high point would be solely to force a circulation to a lower point than could be obtained by running the main under the ceiling above the boiler in the usual manner, but since the risers are taken off this same main, the heated water would immediately rise through the risers, leaving the first floor radiators practically cold. Through experience, I find that the best way to supply radiators in the basement, or on the floor on which the boiler is set, is to connect the radiators as shown in the enclosed sketch, Fig. 3, right of boiler. In this sketch the return from a riser is connected to the basement radiator, thence to the boiler. If necessary, the riser can be increased in size sufficiently to take care of the basement radiator, and sufficient radiation added in the basement to allow for the difference in temperature between the supply and return. In a job which is properly installed, however, this temperature difference would be very slight.

Referring to his sketch (Fig. 2), this will not work

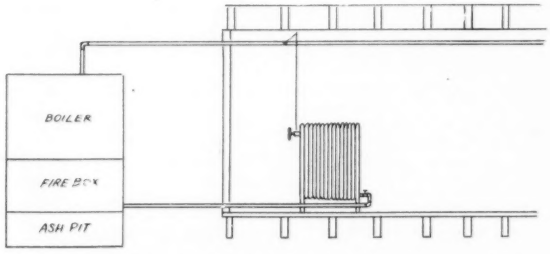


Fig. 2. Sketch of Steam Heating System, Submitted by F. H. C., Everett, Wash.

whether a check valve is placed on the return or not, that is, on a low pressure job, where the pressure is insufficient to raise the condensation above the water-line by the use of traps. Although a check-valve placed on the return would prevent water from the boiler entering

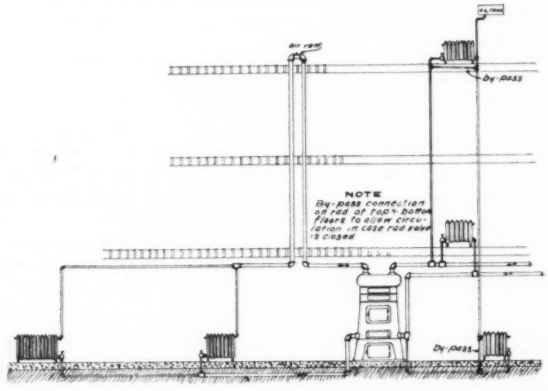


Fig. 3. Sketch of Hot-Water Heating System, Heating Radiators on Same Floor as Boiler. Submitted by L. P. D., St. Paul, Minn.

the radiator, there also would be no way in which to take care of the condensation within the radiator. If the radiator were connected as shown, it would heat by steam until the condensation would fill the radiator to a level with the water line in the boiler, and would then continue to heat by hot-water, providing the radiator were not too great a distance from the boiler.

The only way I know of to heat the radiator continuously by steam is to waste the condensation through a

small trap placed on the return, and thence to the sewer or catch-basin.

St. Paul, Minn. L. P. D.

Editor "Domestic Engineering":—Referring to the plans of heating jobs submitted by F. H. C., Everett, Wash., in the issue of January 15th, I wish to say that the radiator in Fig. 2 will not work connected as shown but it will work in a most efficient manner as a hot-water radiator if a pipe is run from a point just below the water line in the boiler straight to the top of the radiator and the return is run as shown in his sketch.

Chicago. L. H. P.

INSTALLATION OF RANGE-BOILER.

Editor "Domestic Engineering":—I have a 30-gallon range-boiler in my basement connected to the furnace and during the cold weather I have an excess of hot water. My kitchen-range is directly over this range-boiler on the first floor and I desire to connect the boiler with the kitchen-range so that hot water can be had when this kitchen-range is in use and when the furnace is not going.

Will you please advise if you know of any jobs where the range boiler is connected to both the furnace and the kitchen-range, especially when the range-boiler is on the floor below the kitchen-range. In real cold weather when both the kitchen range and the furnace is going I presume that the extra hot water could be run off through the hot-water faucets. Please give me through your columns what information you have on the subject.

Chicago. Constant Reader.

In regard to inquiry published we would state that there should be no difficulty in making this connection. Keep in mind the principle of hot water circulation and do not get one part of the apparatus bucking against another part. We have in the past year had numerous cuts published regarding just such instances as this which can be found by looking over the back-numbers of the paper. If the range-boiler is below the range, it will be necessary to put a loop extending vertically on the circulation pipe, which will give weight enough to force the hot water down to the range boiler in the basement.

IS ACETYLENE GAS POISONOUS?

Editor "Domestic Engineering":—Will you be kind enough to tell me whether or not acetylene gas is poisonous, and also state from what material this gas is made?

Atlanta, Ga. Pinetree.

It is stated that acetylene gas is not poisonous, and when allowed to escape into the room it will wake one up by irritating the throat.

This gas is a product of carbide of calcium and water. The carbide is combined under an intense heat, of quicklime and coke, which is ground very fine in the proportion of about 60 per cent of lime to 40 per cent of coke.

AGREES WITH MR. PHOENIX.

Editor "Domestic Engineering": I noticed what Phoenix said in last issue about floaters. He is right. As a business proposition, it is poor policy to take a week beating your way, in order to get to a job at a distance even if there is no certainty of employment, and then rest a few days in the cooler for trespassing if caught. A man ought to be certain of securing employment by making intelligent inquiries and enclosing postage for reply. If he is confident of himself and willing to "show 'em," he should, on the first offer of employment, buy a ticket, getting there in the quickest possible time and be able to present a decent appearance on arrival. There is less time and wages lost by that method. The side-door proposition is a losing one unless a man is down and out, kicked out and "throwed" out. Bryance.

Monaca, Pa.

IS THIS ARRANGEMENT PRACTICAL?

Editor "Domestic Engineering": I am asked what fixtures would be suitable to heat and clean spring-water bottles, or rather some way of sterilizing spring-water bottles and corks. The bottles each hold one gallon of water. I would like to know if it is possible to heat a small building and at the same time have an abundant supply of hot water for cleaning and sterilizing bottles, as I would like to use one heater only. The dimensions of the building are about 15 ft. by 15 ft., two stories high. The spring water will be tapped on the lower floor, where the heater also is to be placed. The cleaning of the bottles will be done on the second floor. What sanitary arrangement would you suggest for this purpose?

Watervliet, N. Y. C. W. V.

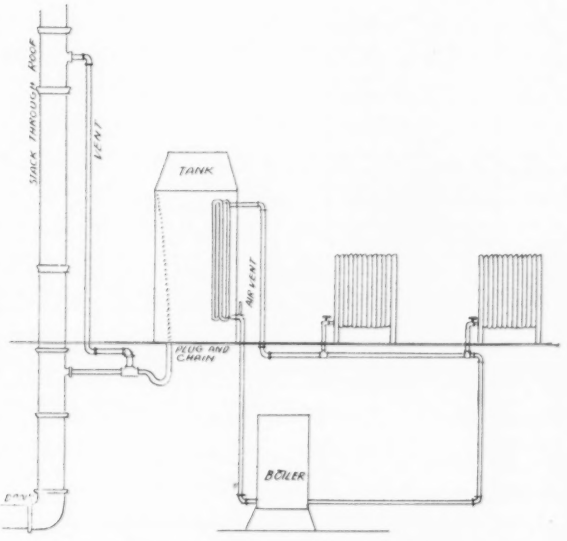


Fig. 4. Plan of Heating System for Bottling Plant.

In response to this inquiry we have had a practical man draw a plan for such an arrangement (see Fig. 4). The location of the radiators and tank is merely relative. The tank should be of galvanized iron and the coil can be supported upon hangers riveted through the side of tank. The coil should be large enough to boil the water in the tank. The drain is so arranged as to remove the dirty water and provisions are made for preventing odors from getting into the building. At the same time the boiler can be used to heat two or more radiators. We should like to hear from some of our readers what they think about this layout.

Kessler Plumbing Co., 7 River St., Duquesne, Pa., has secured the contract for the installation of plumbing and heating systems in the new four-story brick building which is now being erected in that city for A. Jacobs. The consideration is $1,050. Architects Lloyd Bros., Pittsburg, prepared the plans.

The 18th Annual Convention of the Illinois Master Plumbers' Association.

Held at Springfield, Ill., Jan. 26-27, 1910.

The Illinois master plumbers met in convention in record attendance at Springfield, Ill., on Jan. 26-27, 1910. The headquarters of the association were the St. Nicholas hotel and Annex and the sessions were held in the Odd Fellows' Hall. The officers in control of the meetings were: President, W. J. Lang, Chicago; first vice-president, J. E. Fitzgerald, Lake Forest; second vice-president, Geo. Poehner, Joliet; secretary, W. C. Haviland, Aurora; treasurer, W. Schlegel, Belleville; past president, T. E. Walkers, Aurora.

President Lang called the members to order at 10 a. m. and after his opening remarks, introduced the Rev. F. W. Burnham, who delivered an invocation for the success of the proceedings. The president of the Springfield local, Frank U. Patterson, then cordially welcomed the visiting delegates to the capital city of the state. Representing the mayor, Timothy McGrath, a prominent city official, handed out the keys to municipal liberty and joys and offered immunity to violators of Springfield ordinances.

This was responded to on behalf of the association by Dan O'Connor, Peoria, who stated that he did not think the city would regret the third cordial welcome it had extended to the association.

A special invitation had been made to the state associations of Wisconsin, Missouri, Ohio, Iowa, Indiana and Michigan to send delegates to the convention. The following gentlemen appeared in response to this appeal: Wm. A. Decker, Grand Rapids, Mich.; Jacob Schuh, Milwauke, Wis.; Charles G. Bosch, Burlington, Ia.; and R. Clayton, Davenport, Ia. These all addressed the meeting in turn, the burden of their remarks being the need of closer co-operation between the state organizations and expressions of good will to the Illinois state association.

An announcement was made of the provision made by the Springfield local for the entertainment of the visiting ladies: These were taken to Lincoln's Inn on Wednesday afternoon, a reception and lunch being the special features.

The chair appointed as sergeants-of-arms—Chas. Kreble, Springfield, and J. L. Robertson, Mason City.

Resolution Committee—Carl J. Stein, Chairman, Chicago; T. E. Walters, Aurora; Bernard Gause, Jacksonville; Geo. S. Moore, Evanston; Dan O'Connor, Peoria.

Credential Committee—C. D. Brownell, Champaign; C. E. Yole, Rockford; E. J. Ryan, Danville.

A discussion took place on the state law demanding from the master plumbers the annual renewal of their certificates.

C. J. Herbert, Board of Examiners, Chicago, stated that 800 master plumbers and 400 journeymen had complied with this law. In 50 cases, prosecutions had been made and fines to the amount of $250 had been collected. Fifteen suits were at present being instituted and one license had been revoked. The cooperation of state boards was desirable.

E. H. Donahoe, Peoria, president of the plumbers' examining boards of the state of Illinois, an organization in effect since 1905, advocated the establishment of one central board for the whole state. He said there was considerable difficulty in getting city officials to enforce the state law.

James O'Neill, Quincy, stated that his city had not yet complied with the law and that privies were still in use in the business heart of Quincy.

The Auditing Committee appointed by the chair consisted of J. M. Dougherty, Ottawa; W. Hanrahan, Chicago; and George Kearney, Chicago.

A committee was appointed for drafting up resolutions of sympathy for those who suffered by death of the association's members. Chairman—M. L. Mandable, Chicago; E. E. Barrett, Joliet; E. J. Benning, Chicago.

For reading clerk there was appointed John Mackay, Winnetka.

The Press Committee appointed consisted of H. B. McVeigh, Springfield, and Peter M. Munn, Chicago.

On Wednesday afternoon, Jan. 26, the convention went into executive session. The president, W. J. Lang, congratulated the members on the steady growth of the organization. The loyalty of the members for its principles was most encouraging and continual progress had been made during the last two years. It was gratifying that the association had been able to avoid legal entanglements and litigation. He advocated one state board for the examination of plumbers whose headquarters should be in Springfield. The legislative committee was to be congratulated on the successful attainment of its amendment to the state law that required the annual renewal of licenses. It was advisable, he said, that a state inspector of plumbing should be created and competent sub-inspectors, whose vigilance should be manifest in the prevention of the installation of incompetent work. The association needed business men, with fixed and well-developed commercial principles, in order to carry on its work efficiently on conservative lines.

Much of the association's numerical and financial progress was due to the untiring efforts of W. C. Haviland, the secretary.

C. J. Stein, Chicago, stated that 200 members to the Chicago association had been added during the past six months. He deprecated the present methods of sub-contracting and recommended that a committee be appointed to get the state architect to secure, either through the government or the state, the elimination of the plumbing and heating specifications from the contracts.

The secretary's report revealed members in 140 cities and towns, an increase of 82 members during the past year, with a total membership of 1,002, 401 out of, and 601 in Chicago. A steady gain has prevailed for four years.

The executive session of the whole continued all Thursday, Jan. 27th.

A resolution was passed to appoint a committee to secure data on employment of journeymen plumbers, wages and general conditions. This information, it was thought, if it could be obtained would be of service to the master plumbers. The data so secured will be furnished on request to the members of the association.

A resolution was passed to appoint a committee whose object should be to bring about a master plumber's examining board or a series of such boards to determine the

fitness of master plumbers for their position in such towns of small size where licenses are not required by law. It was further by amendment resolved that a State Board of Examiners, consisting of 2 master plumbers, 1 journeyman and 1 member of the State Board of Health, should be secured to hold examinations in such towns; that at least 3 years' experience be required before examination could be taken; and that 2 or more towns or cities of this kind could combine to form a compulsory-inspection district. This board to be appointed by the governor.

A committee was appointed to wait on governor of state, board of control and state architect to secure a separation of heating and plumbing specifications from general building contracts.

A resolution was passed to draft up a suitable souvenir card to Andrew Young, Citronelle, Ala., formerly of Chicago, the oldest ex-president of the association.

A resolution was adopted that an appointment of a committee be made to investigate methods of cost-keeping for plumbers, and from such data to evolve a simplified form of cost-keeping which would satisfactorily provide a uniform basis of comparison throughout the country.

A resolution recommending master plumbers to deal directly with the owner and the architect instead of the general contractor was also passed.

A resolution of condolence with the family of Rolla B. Moodie, Dayton, O., ex-president of the national association, was passed, expressive of the high regard in which the deceased was held by the members of the state association. This also covered in the same terms the deaths of five Chicago members—A. H. Watson, W. Bowden, W. H. Hurley, James Fik and J. H. Schaefer.

A committee, consisting of J. M. Dougherty, Ottawa; M. Dolan, Springfield; and Carl J. Stein, Chicago, was appointed to purchase a suitable testimonial to the retiring president, W. J. Lang.

The election of officers resulted as follows: President, F. U. Patterson, Springfield; first vice-president, W. J. Hilliard, Elmhurst; second vice-president, C. D. Brownell, Champaign; treasurer, W. Schlegel, Belleville. The board of directors re-elected W. C. Haviland as secretary.

The delegates appointed to attend the national convention were W. J. Lang, Chicago; A. P. King, Danville. Alternates: W. McGuire, Rockford; G. C. Barrett, Joliet.

Votes of thanks were extended to the ladies of the Springfield members for their entertainment of the visiting ladies, and also to the Springfield local for its courtesies to the convention.

As a result of the consideration of W. D. Nolan, Washington, D. C., and G. A. Richards, Grand Rapids, Mich., appointed to investigate the matter the association endorsed the insurance standing of the Casualty Co. of America, which had offered to master plumbers, members of the associations, insurance from liability at a low rate and advantageous terms.

The Banquet.

A select banquet, tendered by the Springfield local, terminated the convention work, and this was attended en masse. F. U. Patterson, Springfield, the newly-elected president, was the toastmaster. Interesting speeches were made by W. J. Lang, W. A. Decker, Jacob Schuh, C. G. Bosch, Mr. Hilliard, W. Schlegel, John Mackay, Dan O'Connor, M. Dolan and T. E. Walters.

Delegates Attending the Eighteenth Annual Convention of the Illinois Master Plumbers' Association, Held at Springfield, Ill., January 26 and 27, 1910.

Mr. Dolan stated to the members that the committee appointed to secure the testimonial to the retiring presiden, W. J. Lang, would perform its work in Chicago, and the members would be notified of the result of its choice.

Mr. Lang closed the proceedings by saying that no greater testimonial could be conferred on him than that given by the association's endeavor to re-elect him for a third presidential term.

Following the banquet came a ball in which many members and their ladies participated. W. J. Lang was master of ceremonies. An efficient orchestra enlivened the banquet and stimulated Terpsichorean activity.

THE CONVENTION EXHIBITS.

The St. Nicholas Annex proved to be admirably adapted for convention exhibitive purposes. The long corridor and its adjacent rooms were taken up by the exhibitors and their respective displays.

The Peerless Selling Co., Evansville, Ind., heralded the merits of the "Don't Worry" seat by means of a special trio of sanitary vocalists—H. F. Weaver, H. Snow and Miss Katie Casey. This company is the selling department for the Peerless Tank & Seat Works and the National Pottery Co., Evansville, Ind. These two plants adjoin each other, advantageously affording effective shipment of complete water-closet combinations. Seven of these were displayed in the company's exhibit room. "The lid was raised" on one of the combinations with startling regularity, Miss Kate Casey having added to her repertoire of versatile stunts a closet with upward output of punch. This lady designed the "Don't Worry" seat with its ingenious steel dowel bond. A novel stunt was the "Peerless" advertising electrical display carried out by Sitting Bull in Mexican costume. The "Peerless" quarters were constantly invaded by visitors and the "Don't Worry" booklets were distributed to all. Harry Snow entertained the delegates at midnight, Thursday, with his famous bear dance, ably seconded by O. T. Carson, Pittsburgh Gage & Supply Co., who "beared" himself to the crowd. Nothing cold about Snow. He's always "Bruin" something.

The Sanitary Appliance Co., Neenah, Wis., was represented by A. T. Lueckenbach, manufacturer of the "Cyclone" water-closet ventilator. The removal of foul odors from water-closets is essential to public and private comfort and health. At the same time, it is essential that any apparatus designed for this purpose should be adaptable to all existing conditions, of reasonable prime cost, easily placed and with minimum expense of installation. How all these essentials are vortically embodied in the "Cyclone" Mr. Lueckenbach proved to be adept in expounding.

The Pittsburgh Gage & Supply Co., Pittsburgh, Pa., has a "Gaco" screw-operated ball cock, and O. T. Carson was its convention trumpeter at Springfield. He did this so ably and was so convincing as to its general adaptability that many of the conventioners reviewed themselves anatomically with the idea of an advantageous installation. This ball cock closes with the water pressure, has a repair bushing facilitating its attachment to any tank, and is garanteed against "singing, chattering, hammering and whistling."

"The Capture of the Elusive" should be the title of the booklet issued by the Moline Vacuum Vapor-Heating Co., Moline, Ill. J. M. Robb is one of the Moline crew and was on deck all the time, steering his hearers by means of blue-print charts through all the rocks and shoals of heating to the twin harbors of efficient circulation and radiation. The Moline system is an engineering proposition and is adaptable to a 3-room cottage or a large factory with equal facility. The air trap used allows the air in the system to escape into the atmosphere, but it closes against the escape of steam and water. The vacuum valve simply closes against the readmission of the air after it has once made its exit at that point. Rapidity of circulation, small pipes and regulation of temperatures, with its attendant fuel economy, were the chief points of Mr. Robb's discourses. Mr. Robb invited all heating contractors and those interested in heating propositions to send their building plans to the main office for gratuitous advice and suggestion.

Vaile & Kimes, Dayton, O., are engaged in bridging the gap between the crying need of the fair sex and the rain-water supply furnished by Providence (not R. I.). Every woman considers rain-water in the bath-room and laundry as an indispensable aid to the cleanliness of the household in her charge. The V. & K. water motor pump has been designed to pump this water from the cistern to any part of the house, utilizing city water pressure as its medium of power. Adam Cole did the honors of the exhibit, which comprised a sectional model of the pump and a full-sized pump in actual operation. Mr. Cole had many audiences and attended to the aesthetic sense of the ladies by distributing carnations, placating the gentlemen with a special brand of cigars.

"Colonial"—the name evokes in its prime interpretation memories of simple elegance of form, solidity of construction and dignity of appearance. The H. Mueller Manufacturing Co., Decatur, Ill., has fitted its products to all the good qualities the name implies and Tom F. Leary, St. Louis, Mo., Henry Mueller and E. S. Morrow, both of Decatur, Ill., occupied themselves in expounding the merits of the company's products. In the "Colonial" compression and fuller work, one notes the specialty of design in the absence of corners and sharp edges, thus eliminating to a great degree the wear on the plating.

The company's self-closing "Colonial" work is attractive. This is accomplished by a phosphor-bronze spring in conjunction with a roller-bearing, which practically eliminates friction and consequent wear. The "Colonial" compression stop and waste cock, according to Mr. Leary, is displacing ground keywork in many localities, as its use is unattended by the leakage so often caused by contraction and expansion. Furthermore, a perfect control of the waste is obtained. The company's anti-splashing device on all the "Colonial" fuller and compression work is distinctly noteworthy. The exhibit included a wide range of their specialties, ground key stops, stop and waste cocks, ferrules, water regulators and a full line of specially-made calking tools. Individuality in constructive embodiment of artistic conception and effective design seemed to distinguish the "Colonial" goods throughout.

W. P. Murphy asked everybody he met: Did you ever have any trouble with a drum-trap or clean-out? The Blake Specialty Co., Rock Island, Ill., also enabled him to supply the answer by exhibiting the Blake clean-out in its various forms and adaptations. The "No back" floor drain was also shown. This apparatus, we understand, has been endorsed by the leading ministers of the gospel throughout the country as being a profanity-reducer of the most efficient type.

It is stated by scientists that all ultimate forms in Nature are spherical. The Eljer Co., Cameron, W. Va., belongs to the "Back to Nature" class and in their vitreous china lavatory and tank construction have followed this natural construction. "C. C." Frazier (most appropriate initials) lectured on this topic, using a lavatory bowl and closet tank as bases of demonstration. Cleanliness, durability, strength, volume of discharge, ease of installation, satisfaction of trade, non-corrosion, non-warpage, self-cleansing property, ease of access—these ten points Mr. Frazier enumerated, and if he had only had an extra hand, he could doubtless have found five other meritorious features to his products. We found one extra on the way home. The china soap cup drains into the overflow.

INDIANA MASTER FITTERS WILL GO TO INDIANAPOLIS.

The annual convention of the Indiana State Association of Master Steam and Hot-Water Fitters will be held at Indianapolis, Ind., Tuesday, March 1, 1910, in room 49, United Trust Building, 116 and 120 E. Market St. The official headquarters will be established at Grand Hotel.

Among the Wholesalers

WILL DEAL IN PLUMBING SPECIALTIES.

The Bayonne Supply Co., Jersey City, N. J., has been incorporated with a capital of $100,000 to deal in plumbing and heating specialties. The incorporators are J. J. Treacy, F. G. Smith and R. Treacy, all of Jersey City.

WILL MAKE PLUMBING SPECIALTIES.

The Hill Pump Valve Co., Chicago, Ill., has been incorporated with a capital of $12,500 to manufacture plumbing specialties. The incorporators are Joseph E. Hill, William M. Gilbert and Theodore M. Gilbert.

WILL DEAL IN PLUMBING SPECIALTIES.

The R. T. Sales Co., Elizabeth, N. J., has been incorporated with a capital of $10,000 to deal in plumbing specialties. The incorporators are D. W. Henry, E. Lake and R. Campbell, all of Elizabeth.

WILL MAKE HEATING SPECIALTIES.

The Woods Air Infuser Co., Chicago, Ill., has been incorporated with a capital of $25,000 to manufacture heating and ventilating specialties. The incorporators are E. W. Woods, William A. Stevens and F. H. Vercoe.

BUYS INTEREST IN THE COMPANY.

Frank E. Monroe.

Cambridge Plumbing Supply Company, Cambridgeport, Mass., has just announced that Frank E. Monroe, who has been in its employ for a number of years, has purchased an interest in its business

FACTORY AND OFFICE MOVED.

The National Steam Specialty Co., Chicago, announces that it has moved its factory and general office to 16 and 18 South Clinton Street, in this city, where with increased space and new machinery the concern will be able to give its patrons prompt and efficient service.

ELECTED VICE-PRESIDENT AND GENERAL MANAGER.

The R. C. McClure Co., Syracuse, N. Y., held its annual meeting in that city on Thursday, January 20th, and elected O. W. Middaugh vice-president and general manager of that company, according to announcement just issued by John McClure Chase, the company's president.

WHY NOT VISIT JACKSONVILLE, FLORIDA?

Jacksonville, Fla., is a good place to go to on April 5th, 6th and 7th of most any year. It will be more attractive to you this year because the meetings in joint convention of the Southern Supply & Machinery Dealers' Association and the American Supply & Machinery Manufacturers' Association will be held in Jacksonville on those dates, with headquarters at the Seminole hotel. It was reported, previously, that this convention would be held at Atlanta Beach, Fla., but hotel accommodations were too scant; hence a change to Jacksonville.

The railroad rates will be secured for the delegates and their ladies and business of great importance to the jobbing and manufacturing interests in supplies and machinery will be discussed at this meeting.

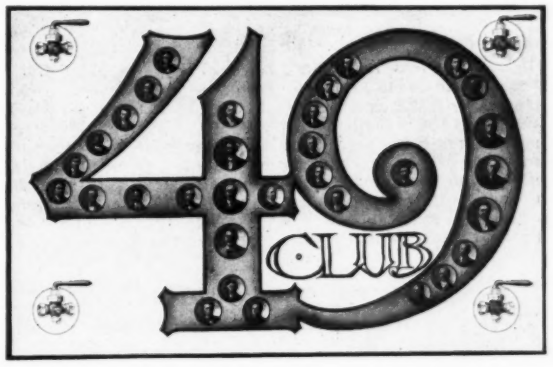
The Seminole hotel has made rates on the European plan from $1.50 per day to $3.00 per day, and the Windsor hotel has made rates of $3.00 and $4.00 per day on the American plan. You can take your choice and pay your money. Alvin M. Smith, secretary and treasurer of the Southern Supply & Machinery Dealers' Association will be glad to furnish further particulars, and the program will be issued as soon as prepared.

BRASS MANUFACTURERS TO MEET IN CLEVELAND.

The National Association of Brass Manufacturers will hold its spring meeting at the Hollenden Hotel, Cleveland, O., on Wednesday and Thursday, March 16-17, 1910. A good attendance is expected of this convention, and Wm. M. Webster, "Commissioner" of the organization, will be pleased to give full particulars concerning the meeting for all those interested.

THE "49 CLUB" ON THE ROAD AGAIN.

The sales-force of the H. Mueller Mfg. Co., Decatur, Ill., is now on the road again after two weeks spent at the general offices and works in that city, and the instructive



The Emblem of Mueller's "49 Club."

and enjoyable time had in that period is now only a memory, but a most pleasant one. One of the more important affairs of the occasion was the initiation of new salesmen into fellowship of the "49 Club," which takes its name from the company's No. 49 stop and waste cock. The club's attractive emblem is shown in the accompanying illustration.

PERSONAL MENTION.

Eugene Willard, of the Potteries Selling Co., was registered at the Stratford in Chicago this week.

Edward H. Kinney, of the George H. Tay Co., San Francisco, has just returned from an extended stay in the East.

Albert V. Conradt, secretary of the Great Western Pottery Co., Kokomo, Ind., is spending two weeks with his family at Palm Beach, Fla.

J. B. Rahm, vice-president and general manager of the United States Supply Co., Omaha, Neb., accompanied by five of his salesmen, was last week on a visit to Chicago, Pittsburg, Detroit, Kokomo, Noblesville and Milwaukee, returning to Omaha on Monday of this week. The party visited the different plants manufacturing plumbing goods in these cities and were entertained by the trade. In addition to Mr. Rahm the party was composed of C. H. Ashton, G. A. Bagnell, R. J. Brown, W. L. McGee and W. H. Griffith.

Archie J. Davis, of the plumbing firm of Johnson & Davis, Denver, is confined to his home at 115 W. Irvington Pl., seriously ill. Mr. Davis has been sick for a number of months. He went to New York for a while, thinking that the change would benefit him, and returned but a short time ago. His many friends are anxious about his condition.

The Metal Market

THE PIG IRON MARKET.

The listlessness apparent in the pig iron markets early in the week has been followed by slightly better buying and the inquiry has considerably improved. A feature of the trade has been a large inquiry and the closing of several contracts for malleable. This is chiefly from manufacturers of railroad material. The General Electric Company whose purchases for the Schenectady plant was noted last week has further inquiries for the Lynn and Pittsfield plants and the takings for these will run up to about 25,000 tons. A feature of the trade is a continued inquiry for small lots of from 100 to 200 tons for jobbing foundries. These all seem anxious to cover their requirements for the last half of the year, and although sales have not been reported, it is understood that both Virginia and Buffalo interests are selling for June and later. Prices are without change, No. 2 Southern foundry, Birmingham, continue to be held at $14. Virginia foundry No. 1 is $19.25 to $19.75. Virginia foundry No. 2 is $18.75 to $19.25. Basic is $18 to $18.50, New York.

THE COPPER MARKET.

Prices are less firm than a week ago, but electrolytic is obtainable at 13.62½c in car loads and 14.25c in small quantities. Lake can likewise be had at 13.87½c for large lots and 14.50c for small quantities. During the week business has been practically at a standstill and the only news has been concerning mergers of copper properties and the big fees exacted by the attorneys. Buying by European interests has been light, but considerable metal is going abroad and into warehouses there. The total shipment since January 1st aggregates 23,000 tons.

THE PIG TIN SITUATION.

The United States Steel Corporation through its subsidiary companies practically controls all the spot tin in this country. The far-reaching grasp that this company has on the tin situation is a surprise to those conversant with conditions. Whether the company intends to use all the tin contracted for, or to peddle it out to other tin-plate makers is impossible to state, but the influence that this company can exert in the tin market either to raise or lower prices is tremendous. It has always adopted a conservative policy and therefore consumers of tin expect little trouble from this quarter. Prices are slightly lower than last week and it is possible to obtain tin in five-ton lots at 32.60c; small lots are approximately 34 to 35c. The arrivals this month have been enormous. Nearly 5,000 tons so far with 600 tons likely to make this month's delivery.

LEAD MARKET QUIET.

The lead market is exceedingly quiet and a little easier. The American Smelting & Refining Co. continues to quote shipment lead in 50-ton lots at 4.70c. Outside interests are asking 4.72½c for spot New York and 4.60c St. Louis.

NEW YORK METAL MARKET, FEBRUARY 1.

Copper, Prime Lake	$13.90
Copper, Electrolytic	13.60
Lead	4.70
Spelter	6.20
Antimony, Cooksons	8.50
Straits Tin	32.60

CHICAGO IRON MARKET, FEBRUARY 2.

Lake Superior Charcoal	$19.50-$20.00
Southern, No. 2 Foundry	18.35- 18.85
Northern, No. 2 Foundry	19.00- 19.50

February 1, 1910.

Foundry iron was the same as the week previous.

$1 more a ton than year previous.

Copper was ⅛ cent more a lb. than month previous.

⅛ cent less than the year previous.

NEW YORK OLD METAL MARKET.

Dealers' buying prices are as follows:

Heavy crucibled copper	$12.37½ to	$12.62½
Light copper	11.00	11.12½
Plumbers' cocks and faucets	9.75	10.00
Heavy lead	4.25	4.40
Tea lead	4.05	4.15
Solder joints	7.50	8.00
Block tin pipe	30.50	31.51

The mills are not buying much and dealers are reluctant to make large commitments. Prices are without material change and quoted as follows:

No. 1 yard wrought, long	$18.00@19.50
No. 1 yard wrought, short	17.00@18.50
Machinery, cast	15.00@15.50
Heavy steel melting, scrap	16.50@17.00
Wrought pipes and tubes	16.00@16.50
Wrought turnings	14.00@14.50
Cast borings	12.00@12.50
Stove plates	12.00@12.50

SOUTHERN NOTES.

The Valley Plumbing and Machinery Co., Brownsville, Tex., has been incorporated with a capital of $10,000. The incorporators are S. C. Tucker, J. W. Lamb and E. L. Burks.

The Sanitary Plumbing Co., Athens, Ga., has moved its establishment from Washington street to the Commercial hotel building on Broad street.

Lexington Plumbing & Heating Co., Lexington, Va., has secured the contract for the plumbing and heating in W. T. Shield's new residence in that town. The consideration is $1,500.

The Nicholson Plumbing Co., 2000 Boyd St., Baltimore, Md., has been incorporated by Edward H. Nicholson, William Schlegel and Chas. J. Wittler.

James Lloyd's plumbing establishment at the corner of Greenwood and Railroad avenues, Marshall, Tex., was destroyed by fire last week. The loss was covered by insurance.

Plumbing Inspector Thomas Rosenfield, Rock Island, Ill., is making arrangement to conform with the uniform plumbing law of the state, which went into effect last summer. The new law provides that all shops must have a certificate of examination, the fee for this being $50. Journeymen plumbers will be compelled to renew their certificates annually, and a fee of $1 will be required. The fees go to the city treasury.

James O'Neil has resigned as plumbing inspector at Kalmazoo, Mich. His resignation will take effect May 1st. It is his intention to enter the plumbing business on his own account and open an establishment on Church street in that city.

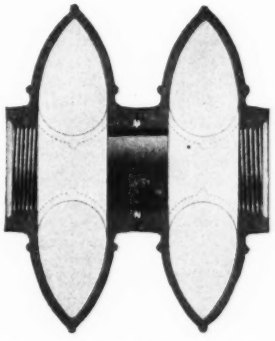
OBITUARY.

William G. Heath, proprietor of a steam and gas-fitting establishment at 63 Friendship St., Providence, R. I., died Thursday evening, January 13th, of heart disease in his 74th year. His wife and one son survive him.

Benjamin A. Johnson, a pioneer master plumber in Jeffersonville, Ky., passed away at his home in that town on Thursday, January 13th, in his 82nd year. He was born in Newberg, Ky., learned the plumbing and tinning trade in his youth, went to Jeffersonville in 1851 and started a plumbing and hardware business soon after. This business he continued up to the time of his death, although in recent years he had been compelled to pay less attention to his business affairs on account of his advanced age. He is survived by his wife, three daughters and one son.

"All Right on the Job."

One of the features of AMERICAN Radiators which makes them popular is the tight and easy "make-up." The connections are as tight as a locomotive boiler, and insure safe outfitting—no worry that the radiation will not be "all right on the job."



Showing Nipple Screwed Into Two Sections

Our improved Right and Left Hand Nipples with 60 degree threads make the tightest joint known to radiator mechanics.—Just note the transverse view of a nipple screwed into the two sections herewith. It stands for tightness, tensile strength, safe shipments and general durability.

AMERICAN & IDEAL
RADIATORS & BOILERS

A Heating Outfit is More Efficient with NORWALL and SYLPHON SPECIALTIES

AMERICAN RADIATOR COMPANY

General Offices, 282-286 Michigan Ave., Chicago.

New York	Cincinnati	Cleveland	Atlanta	Bradford, Ont.	Denver
Philadelphia	Boston	Milwaukee	Minneapolis	Seattle	St. Louis
Pittsburg	Buffalo	Indianapolis	Kansas City	Omaha	San Francisco
Washington					

NEW ORLEANS MASTER PLUMBERS' ANNUAL BANQUET.

The Master Plumbers' Association of New Orleans, La., held its annual installation banquet at Frank Starcich's, on Poydras St., in that city on Monday evening, January 24th. It was a good old-fashioned affair that began with oyster cocktails and ended with champagne and coffee, and in between there was some talking. The officers installed were R. V. Lambert, who had been re-elected president, H. S. Charlton, vice-president; Julius Loefler, secretary; John E. Flynn, treasurer, and on the executive committee James H. Aitken, J. S. Gaiennie, W. E. Thomas, E. M. Babst and J. T. Mullen.

Among the guests who answered the invitation to be present were E. H. Bloch, of the Sewerage and Water Board; J. L. Porter, head of the filtration plant; A. Gaspard, J. M. Malone, D. Luderbach, J. Noone and Martin Manion.

Among the members present were S. B. Stewart, A. M. Rennyson, W. T. Coates, R. H. Charlton, J. S. Kiely, F. Kidd, E. Schincke, P. H. Quinlan, Jr., John F. Kiely, William McGilvray and J. S. Steivater.

The committee in charge was J. Loefler, James H. Aitken and J. S. Gaiennie.

When the talking time arrived President Lambert said that he appreciated being re-elected. He took pride in the organization and considered its standing worthy of the esteem of any man. The plumbers here have one of the best associations of master plumbers in the South. There is more money invested in the plumbing trade and the brainiest men are connected with it, he said.

The plumbers need an association and it is a benefit to those dependent on them to get that measure for their money that they are entitled to get. The rules employed at present were worked on for months and have been tried several years, and they are being improved and the public is getting the benefit for its money, as the plumbers gave their best ability in formulating the rules, and there is a pretty thorough inspection and the work is being done as well as or better than elsewhere. The public owes this to the Plumbers' Association, which had to take up the matter and carry it through. The association hopes to cooperate with those in authority and who oversee the work, and to improve it from time to time.

There are still some plumbers outside, Mr. Lambert said, but they lose the benefit of pleasant intercourse, and it is hoped that they will come in.

Among the other speakers at the banquet were: E. H. Block, Martin Manion, J. L. Porter, S. B. Stewart, H. S. Charlton and J. Noone. The banquet ended at a late hour after a pleasant evening.

VALLEY PLUMBERS HOLD FIRST ANNUAL BANQUET.

Master plumbers of Saginaw, Mich., held their first annual banquet on Thursday evening, January 27th, in the All-Saginaw association's club rooms. Not only members of the local association, but others in the plumbing trade were invited. Bay City came up strong, represented by the following guests: W. A. Wanless, president; F. C. Finn, vice-president; O. C. Mann, secretary; M. Kelly, treasurer; A. Meiselback, Clyde Mann, P. J. McCarthy, T. E. Smith, Charles Mulholland, Frank Godeyne. Among those present from the Saginaw association were: J. Ahearn, president; Thos. H. Ford, vice-president; George Gaertner, secretary; E. V. Merrill, treasurer; J. S. Block, J. H. McKenzie, Martin C. Kaiser, George Schrems, Charles Cannan, Felix B. Kren, A. J. Leyerer, W. J. Richter. After the elaborate spread had received due attention, impromptu speeches, stories and songs were in order, and a general good time was enjoyed by everyone in attendance. The event was declared an unqualified success and the Bay City plumbers declared that they would have the second affair of the kind.

WASHINGTON MASTER PLUMBERS' ANNUAL DINNER.

What proved to be a most enjoyable evening of jollity and pleasure was the annual reception and banquet of the Master Plumbers' Association of the District of Columbia, which was held in Washington, D. C., Thursday evening, Jan. 28, 1910, commencing at 8:30 p. m. That spirit of good fellowship, which is always in evidence in affairs where the managing hand is that of Mr. Walter D. Nolan, was present throughout the evening and he was assured by the many participants of the evening's enjoyment that they were leaving with most pleasant memories of the occasion. The program which had been carefully arranged consisted of seven numbers, including music, singing, impromptu talks, and the banquet, all of which were well received by the large assemblage. The committee having the matter in charge consisted of Messrs. Walter D. Nolan, chairman; Ed. J. Hannan, F. C. Stelzer, Wm. Conradis, Harry Suit, M. J. McCarthy, Peter C. Schaefer, F. W. Quinter, and Arthur J. Tholl.

Among the invited guests present were: Alfred R. McGonegal, inspector of plumbing for the district; Col. R. A. O'Brien, principal assistant inspector of plumbing, and the following assistant inspectors of plumbing: William L. Marsden, Joseph D. Moriarty, Chas. E. Matthews, George A. Crawford and Samuel Tapp.

Messrs. C. Eckloff, E. H. Grove, G. O. Frank, E. P. Carlin, Harry Donovan, H. M. Woodward, Harry E. Brooks, Dr. William C. Woodward, health officer; Morris Hacker, inspector of buildings; Snowden Ashford, municipal architect; Charles A. Langley, president Master Builders' Association; F. C. Adams, president Architect's Club; C. Towers, of the office of the Collector of Taxes

The delegation from the City of Baltimore consisted of Messrs. John Trainor, J. F. P. Carey, J. B. Hager, M. F. Frederick and August Eidman, representing the Baltimore Association of Master Plumbers, and Mr. J. H. Seates, secretary Baltimore Builders' Exchange.

W. Emmett Crosby, executive clerk of the National Association of Master Plumbers, was also present.

Among the supply houses which accepted invitations with their presence were Crane Company, by Herbert W. Seymour; The C. J. McCubbin Co., by John K. Heyl; The E. G. Schaefer Co., by U. C. Cunningham; The J. L. Mott Iron Works, by Sanford McKeeby; Jenkins Bros., by C. E. Walton; the L. Wolff Mfg. Co., by H. S. Powell, and the Haines, Jones & Cadbury Company by H. R. Hurst and H. S. Bonner, and J. F. Brady.

Other guests present were: John Mitchell, Sr., Louis Conradis, Henry B. Davis, ex-inspector of plumbing, District of Columbia; Seely Hutchinson, Walter Koch and William S. McCarthy.

The following members of the Washington Association were present: Samuel Artz, president; Harry T. Suit, first vice-president; F. W. Quinter, second vice-president; Frederick C. Stelzer, secretary; Ed. J. Hannan, treasurer; William Conradis, sergeant-at-arms; Walter D. Nolan, John Nolan, Walter Daniels, Mr. Kaldenback, T. C. Clark, P. F. Hannan, David E. Jenkins, Lawrence J. Mangan, D. J. Murphy, Wm. Shields, Arthur J. Tholl, George D. Warner, Joseph A. Herbert, Elmer Koch, Mr. Thomas O. May, P. T. Niland, Peter C. Schaefer, Mr. Welch, M. J. McCarthy, Mr. John Krause, E. J. McGolrick, Cornelius Regan, John Shedd, W. E. Suit, and D. S. Williamson.

NORTHAMPTON PLUMBERS ELECT OFFICERS.

The Master Plumbers' Association of Northampton, Mass., has elected the following officers for 1910: President, Frank E. Shumway; vice-president, H. N. Brewster; secretary, W. A. Brownell; treasurer, John Riley. This is Mr. Shumway's third term as president of the association.

TRADE LITERATURE RECEIVED THIS WEEK.

The McRae & Roberts Co., Detroit, Mich., advertises its existence and purpose by distribution of a handsome calendar illustrated by a vividly colored country scene. No one can look at it without the desire to drop a hook in the quiet stream and try for fisherman's luck. Meanwhile the company is fishing for fresh trade for its steam, water and gas brass goods; bibbs, stops, cocks, valves, plugs and burners—all these are dangled alluring on this polychromatic calendar-hook. Write and get one and say where your read about it.

The Cahill Iron Works, Chattanooga, Tenn., is catering to the Great Unwashed and its service by issuing 135 pages of illustrated descriptions of plumbers' cast-iron enamel ware. The lady on page 90 evidently finds the company's products a source of joy and comfort. The catalog is comprehensive enough to be worth of a place on the book shelf of everyone interested in the trade. A one-cent postal-card application will get it.

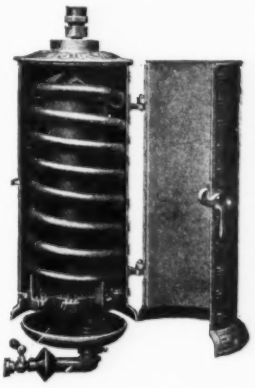
Warren Webster & Co., Camden, N. J., has recently issued in neat booklet form "A statement to the Members of the National Association of Master Steam and Hot-Water Fitters." This presents lucid statements concerning the company's patents establishing clearly its position and reproducing opinions of prominent legal authorities. Those interested can obtain copies of the booklet upon application to the company.

Satisfaction for man and beast is offered by the Kewanee Water Supply Co., Kewanee, Ill., and this offer is illustrated by an attractively designed picture in colors of a Kewanee installation. Over 10,000 Kewanee pneumatic tanks and systems are giving satisfaction to their purchasers. The picture is well calculated to create desire and desire is the father of trade. If you ever dream of an ideal country home, write for this work of art. It is pleasing and stimulative to domestic comfort.

With the Makers

THE LAWSON IMPROVED GAS WATER-HEATER.

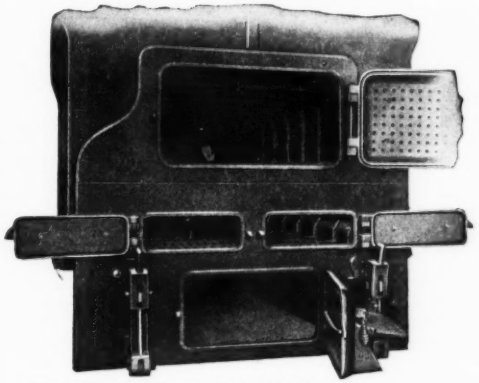
The Lawson Mfg. Co., Homestead, Pa., has just placed on the market what will be known as the Lawson Improved gas water-heater, a new pattern, with cast iron jacket of the Lawson copper coil range-boiler heater, which is said to have been the pioneer in its line. The new Lawson heater, which is shown in the accompanying illustration, is attached to the kitchen-boiler, and though the water-back in the range may be depended upon during the winter to heat the water, the independent gas water-heater is almost indispensable in the summer season. It avoids heating the house when hot water is wanted for bath, and saves the trouble attendant upon starting fire in the kitchen-range.



Hot water is produced very rapidly with this heater and in fifteen minutes after lighting there is plenty of hot water for bath. The continuous copper coil provides a large heating surface and being comparatively thin, yet sufficiently strong, the heat penetrates it instantly. A bath will not cost more than a cent for gas, and for a dollar or two a month the heater may be kept lit constantly, thus having hot water available, and in any quantity at all times. The Lawson heaters are made in several styles and in a number of sizes suitable for range-boilers up to 100 gallons. A new catalogue of these heaters has been issued and the manufacturers will gladly send a copy

CAPITOL BOILERS AND RADIATORS

"We have just installed a second heater of yours, because the first gave entire satisfaction."—Salisbury (Conn.) School, G. E. Snalle, Secy.



View of Fire pot of Improved Capitol Boiler.
Note the large amount of direct heating surface, the large deep fire pot, the roomy ash-pit, and the ease with which the entire boiler can be gotten at.

In a Class By Itself

Do not get the idea that the CAPITOL is an ordinary boiler. It is in a class by itself, because it has distinctive features which were placed there for your benefit and for the benefit of your customer.

Divided sections are easier for you to handle, can be connected easier and give your customer longer efficient service.

The sections are shaped so that each one is an individual boiler delivering steam or hot water into the common topheader to which all the sections are connected.

The topheader which is countersunk flush with the top of the sections insures absolutely dry steam and a steady water line.

Are you interested in learning all the details of this expert construction? We invite your request for circulars.

United States Heater Company.

General Offices and Works: Fort St. and Campbell Ave., DETROIT, MICH.

BRANCHES:

NEW YORK	-	129 Worth St.
CHICAGO	-	34 Dearborn St.
OMAHA	-	916 Farnam St.
DETROIT	-	139 Jefferson Ave.
KANSAS CITY OFFICE	-	1020 Commerce Bldg.

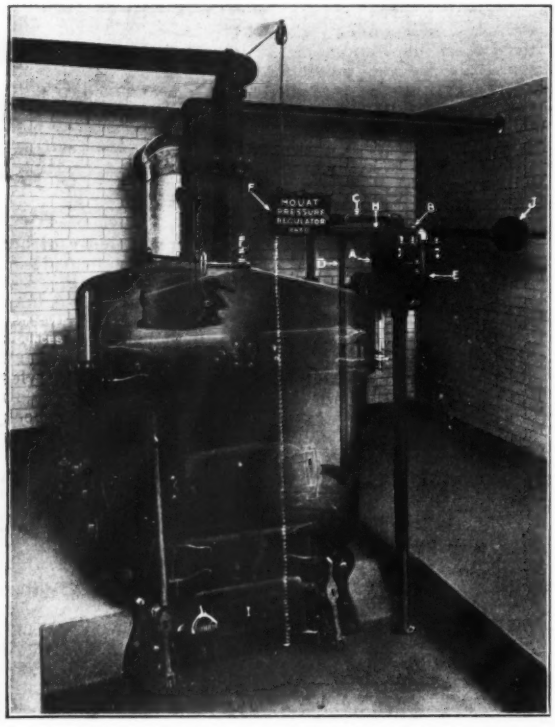
SALES AGENCIES:

MINNEAPOLIS, MINN.,	-	Plumbing & S. F. Supplies Co.
ST. LOUIS, MO.,	-	L. M. Rumsey Mfg. Co.
DENVER, COLO.,	-	Kellogg & Stokes Stove Co.
DULUTH, MINN.,	-	Duluth Plumbing Supplies Co.

to anyone interested upon application, mentioning "Domestic Engineering."

THE MOUAT VAPOR HEATING SYSTEM.

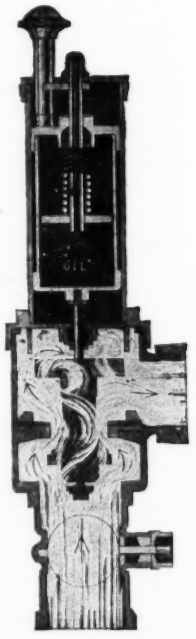
The Mouat-Squires Co., 1246-1254 West Fourth St., Cleveland, O., has just issued a well-printed and copiously illustrated booklet, entitled "The Mouat Vapor Heating System," describing and illustrating the Mouat pressure regulator, a device which was recently invented and patented by T. G. Mouat, the president of the above company. The Mouat vapor heating system is so constructed —according to this booklet—that admission of vapor to the radiators can be graduated by means of fractional valves to heat any portion or all of each radiator to suit the requirements of the weather, insuring comfort and economy, as fuel is consumed only in proportion to the amount of



How the Mouat Pressure Regulator Works on the Job.

heat turned on. The Mouat pressure-regulator is claimed to operate with ounces of pressure where ordinary systems use pounds. A glance at the accompanying illustration together with the following "key" will make its operation clear: The stationary receptacle A is first filled with water through the filling plug B and is connected at the top with a pipe C from the steam-space of the boiler, and an overflow pipe D to the water space of the boiler. When the pressure of vapor exceeds that at which the regulator is set to open, it forces the water down in the stationary receptacle A and up through the flexible connection E into the movable receptacle F, which is located at the end of the hollow lever H, this causes the movable receptacle F and lever H to tilt downward and close the damper I. When the pressure decreases an ounce or so the water runs out of the movable receptacle F back into the stationary receptacle A and the weight J causes the reverse operation of the lever and dampers to occur. The working parts of the regulator are connected above the water-line of the boiler and are not affected in any way by high water or the variations of an unsteady water-line. The stationary receptacle is kept automatically full of water by the condensation from the supply-pipe, any surplus water being carried back to the boiler through the overflow pipe. The regulator is the only mechanically operated part of the system. Although the pressure is never over a few ounces, the power exerted by the pressure plus the weight of water used together is greatly in excess of the force required to operate the regulator. The manufacturers will be glad to furnish interested parties with complete details about this new device upon application, mentioning "Domestic Engineering."

THE REPUBLIC "OIL-REGULATED" FLUSHING VALVE.



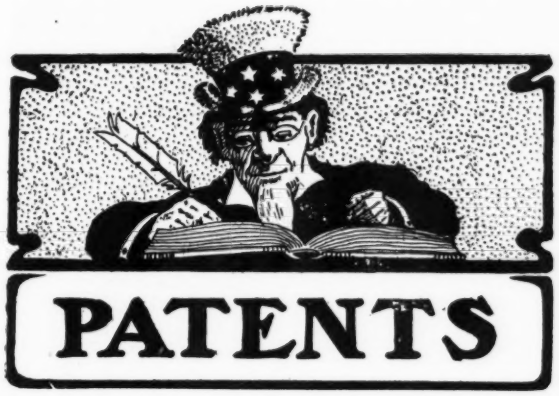
The Republic Mfg. Co., 656-658 West Washington St., Chicago, has placed on the market a self-closing valve under the name of the Republic "oil-regulated" flushing valve, a sectional view of which is shown in the accompanying illustration. In describing this device the manufacturers state that it is a perfect-working self-closing valve, an important feature obtained by using oil as a controlling means instead of water as in other makes, and they add that it is "a valve that can be depended upon at all times, having been pronounced by experts the simplest and best flushing device upon the market. These valves have been in use for nearly six years and have given perfect satisfaction wherever installed, owing to their excellent construction and their oil regulation. They are an absolute success, as their operation is not affected by mud, sand, alum, alkali or any other foreign substance contained in the water, because the piston, spring and controlling tube, which are the vital parts, and on which the life of the valve depends, are enclosed in a cast-brass air-tight chamber filled with oil, which the water cannot reach, thus affording a protection not found in any other valve. Oil will never need to be replenished as mineral oil is used, which does not change in its consistency." Among other additional claims made for these valves the following are probably the most noteworthy: They are easily opened by pressing the button or raising the lever and releasing it; the regulation of the flow of water is quickly and accurately accomplished by turning the regulating rod, located on top of the valve, without shutting off the water; they are noiseless in operation and will not hammer, and the entire working parts of the valve can be removed instantly without disconnecting it from the supply pipe or the bowl. The manufacturers will be glad to send interested parties complete information upon request mentioning "Domestic Engineering."

NEWS FROM DENVER.

The well-known Crean Plumbing Co., 1509 Tremont Pl., Denver, has changed hands and is now known as the firm of Buckley & Schmidt, who succeed W. T. Crean. Mr. Crean was forced to give up his business on account of the poor health of his wife, who has been in the East for a long time. Mr. Crean was one of the oldest members of the Denver Master Plumbers' association and was always very active in association work. In honor and recognition of this the Denver association has made him an honorary member.

H. D. Everett, master plumber at 2320 Lafayette St., Denver, has gone to California for a month's sojourn for a rest and for his daughter's health.

Roy Colburn and John L. Williamson have formed a partnership and opened up a plumbing shop at 4050 Tejon St., Denver, the firm to be known as Colburn & Williamson. Mr. Colburn has been in Denver for some time, having formerly worked for the Wallace Plumbing Company. Mr. Williamson came there recently from the East. They have been admitted into membership in the Denver Master Plumber's association.



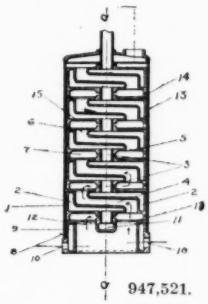
947,234, Tank-valve—Albert D. Herschler, Ashland, O.

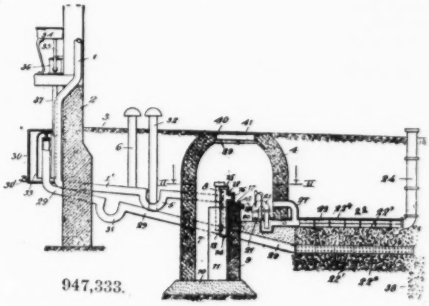
947,301, Humidifier—John W. Fries, Winston Salem, N. C.

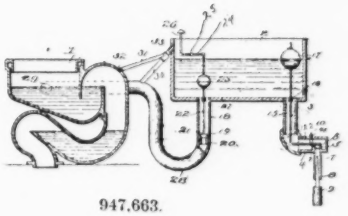
947,308, Water-heating apparatus—Walter W. Rich, Putnam, Conn., assignor to Putnam Foundry and Machine Company, Providence, R. I., a corporation of Connecticut.

947,311, Hydraulically-operated valve—Erich Sandner, Cleveland, O., assignor to Julius I. Wile, Cleveland, O.

947,333, Ventilation and aeration of sewage in sewage plants—Frank Hamilton, Jamaica, N. Y. One of the most important claims made for this invention reads as follows: "In combination in apparatus for the purification and disposal of the sewage of a dwelling house, a tank containing a septic chamber and a dosing chamber; an aerobic filter bed in contact with and buried in the soil; means for intermittently discharging measured volumes of the effluent from the septic chamber into the top portion of said bed; an aerating duct in the bottom portion of said bed; an imperforate duct having a fresh air inlet at a distance from said filter bed and connected with said aerating duct; and means for intermittently discharging a quantity of the comparatively pure liquid portion of the sewage of the dwelling house into said imperforate duct above said fresh air inlet to entrap a charge of air and force the same out through said aerating duct."


947,521.


947,333.


947,663.

947,363, Oil-burner—Glenn D. Will, Eureka, Cal.

947,461, Flexible faucet connection—Frank S. Skiff, Portland, Ore.

947,463, Valve—Theodore R. Sundberg, Salt Lake City, Utah, assignor of one-half to Louis S. Cates, Bingham Canyon, Utah.

947,521, Water-heater—Frank J. Randall, Cleveland, O. The most important claim for this invention is as follows: "In a water heater the combination of a series of superimposed sections, each section comprising a water chamber, communication between the several water chambers being had by a series of alined centrally disposed openings, an inclined flue within the water chamber extending transversely between the alined openings therein from an opening on the lower face of the section diagonally to an opening on the upper face, the flues of the several sections being disposed substantially parallel, and a recess on the under side of the section into which open the adjoining flues; and a heating section, comprising a hollow wall having a water inlet opening and a connection between such wall and the centrally disposed opening of the adjoining water chamber."

947,663, Flush-box—Valentine H. Hobson, Richmond, Ky. One of the broadest claims made for this invention reads as follows: "In a closet flushing system, a tank, means for leading water therefrom, a continuously submerged valve positioned below said tank for regulating the discharge of water therefrom, a pipe surrounding said valve, and in free communication with said tank for containing water for maintaining said level in a continuously submerged, and a float connected with said valve for holding said valve closed when the water level in said tank has reached a predetermined degree, and for opening said valve when the water level in said tank has fallen from its normal height."

CONVENTION DATES.

Feb. 15 and 16, 1910.—Nineteenth annual convention of the Ohio State Association of Master Plumbers, at Youngstown, Ohio. The sessions will be held at Knights of Columbus Hall, and headquarters will be established at the Tod House. President, J. L. Riley, 157 McDonough St., Dayton, Ohio; secretary-treasurer, Eb Ellen, 4714 Central Ave., S. E., Cleveland, Ohio.

Feb. 25 and 26, 1910.—Annual convention of the Idaho State Association of Master Plumbers, at Boise, Idaho. The officers of the association are: President, S. T. Davis, Boise; vice-president, Frank Healy, Twin Falls; secretary, J. F. Cooney, Twin Falls; treasurer, A. C. Adelman, Boise.

Mar. 7 and 8, 1910.—Annual convention of the Kansas State Association of Master Plumbers, at Kansas City, Kans. Headquarters at the Grund Hotel. E. D. Draper, 730 Minn. Ave., Kansas City, Kans., secretary.

Mar. 8 and 9, 1910.—Annual convention of the New York State Association of Master Plumbers, in New York City. President, Isaac J. Brown, 79 Fifth Ave., New York City; secretary, T. S. Cochrane, Jr., 222 West 36th St., New York City.

Mar. 8 and 9, 1910.—Annual convention of Oklahoma State Association of Master Plumbers. The place not yet decided upon. The officers of the association are: President, Gus Hanson, Oklahoma City; vice-president, W. V. Roesch, Shawnee; secretary, D. W. Fitts, Oklahoma City; treasurer, Walter Newman, Shawnee, Okla.

March 14, 15 and 16, 1910.—Annual convention of the National Association of Jobbers of Wrought Pipe and Fittings, at the Fort Pitt hotel, Pittsburg, Pa. The officers of the association are: President, A. E. Ford, Philadelphia; first vice-president, C. H. Simmons, New York City; second vice-president, O. F. Felix, Pittsburgh; treasurer, C. G. Cornell, Jr., New York City; advisory secretary, T. James Fernley, Philadelphia; secretary, Thos. A. Fernley, Philadelphia.

Apr. 5, 6 and 7, 1910.—Annual joint convention of the American Supply and Machinery Manufacturers' Association and the Southern Supply and Machinery Dealers' Association, in Jacksonville, Fla. Headquarters at the Seminole Hotel. Alvin M. Smith, Richmond, Va., secretary and treasurer of the Southern Association.

CLASSIFIED ADVERTISEMENTS

Help Wanted

Salesman Wanted

Wanted—Steam and Hot Water Boiler salesman. Chicago or road territory open. Address No. 202, Domestic Engineering, 325 Dearborn St., Chicago.

Competent salesman thoroughly posted on heating and power supplies to canvass the f ctory and mill trade in a large city. Address with full particulars, etc., No. 200, "Domestic Engineering," 323-325 Dearborn St., Chicago.

Familiar with general line of plumbing and heating goods, to travel in southern Michigan, northern Indiana and northwestern Ohio. State fully experience, amount of annual sales and salary expected. Address No. 199, "Domestic Engineering," 323-325 Dearborn St., Chicago.

Wanted.

Combined plumber and fitter; young, married, sober, industrious man; steady work for right man. Address No. 209, "Domestic Engineering," Chicago.

Wanted—First-class representative in the boiler and radiator line for territory adjacent to Chicago. Address No. 201, Domestic Engineering, 325 Dearborn St., Chicago.

Situations Wanted

Position Wanted.

By a plumber and steam and hot water fitter, 18 years experience, can take charge of job and estimate. Address No. 210, "Domestic Engineering," Chicago.

By traveling salesman with 15 years' experience and acquaintance with plumbing trade on Pacific Coast. A line of agencies. Commission basis. Address No. 206, Domestic Engineering, Chicago.

Job wanted by a practical plumber and steamfitter, sober and industrious; reference furnished. Address T. W., Post Office Box, No. 262, Clearfield, Pa.

Bookkeeper, who has had experience in plumbing and plumbing supplies, seeks position with either branch of business. Will also keep small books evenings. Address No. 211, "Domestic Engineering," Chicago.

PERSONAL.

Charles H. Denison,

Consulting Practical Specialist. Low Pressure Steam Heating, Hot Water Heating, Gas, Plumbing and all business affairs relating to the craft. Address 2730 Wilcox Avenue, Chicago.

Partner Wanted.

Practical Plumber to manage and invest $400.00 in an established heating and plumbing business, located in a South Side Chicago Suburb. Do not hesitate to inquire of my proposition, as this is one grand opportunity for you and me. Address No. 212, "Domestic Engineering," Chicago.

For Sale

Plumbing, heating and tinning business at inventory; town of 7,500; books show best trade in town. Come quick and do business. S. A. Teel, Bangor, Pa.

Plumbing, heating and light machine repairing business in city of 3,000 in southern Minnesota; progressive community; good reasons for selling. Address No. 204, Domestic Engineering, Chicago.

Plumbing Schools.

Learn plumbing on new buildings in four months. Tools furnished. Master Plumbers' Trade School, 3659 Finney Ave., St. Louis, Mo.

Buyers' Ready Reference

Brass Castings.

We are equipped to do your castings in brass, bronze or special metals. Get our prices. McCambridge-Cooper Company, Philadelphia, Pa.

Couplings.

Sell your surplus couplings and fittings. We buy. Write us. A. & J. Mfg. Co., 26 W. Randolph street, Chicago.

Gas Fixtures.

E. Baggott Co., 45-47 East Lake street, Chicago, Ill. Makers of Gas Fixtures and Fittings.

Pipe, Cast Iron.

Chas. Millar & Son Co., Utica, N. Y. Superior quality Cast Iron Gas and Water Pipe, Cast Iron Soil Pipe and Fittings, Cast Iron Screwed Fittings.

Traps, Steam.

The Albany Steam Trap Co., Albany, N. Y. Improved Return Steam Traps. Practicability and efficiency.

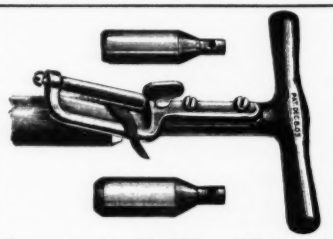
Water Closets.

K. V. A. Closet Tanks and Seats. None better made. Knott-Van Arnam Mfg. Co., Fort Wayne, Ind.

The R. C. McClure Co., Syracuse, N. Y., Mfrs. of the very highest grade of Water Closets. Send for booklet.

These Ads. Pay.

M. J. Schuster, Oklahoma City, writes: "The ad. which I carried in "Domestic Engineering" some time ago, regarding the sale of my shop, brought the desired results, and I can recommend your paper as a No. 1 advertising medium.



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Patent Dec. 8, 1908 Sold by Jobbers